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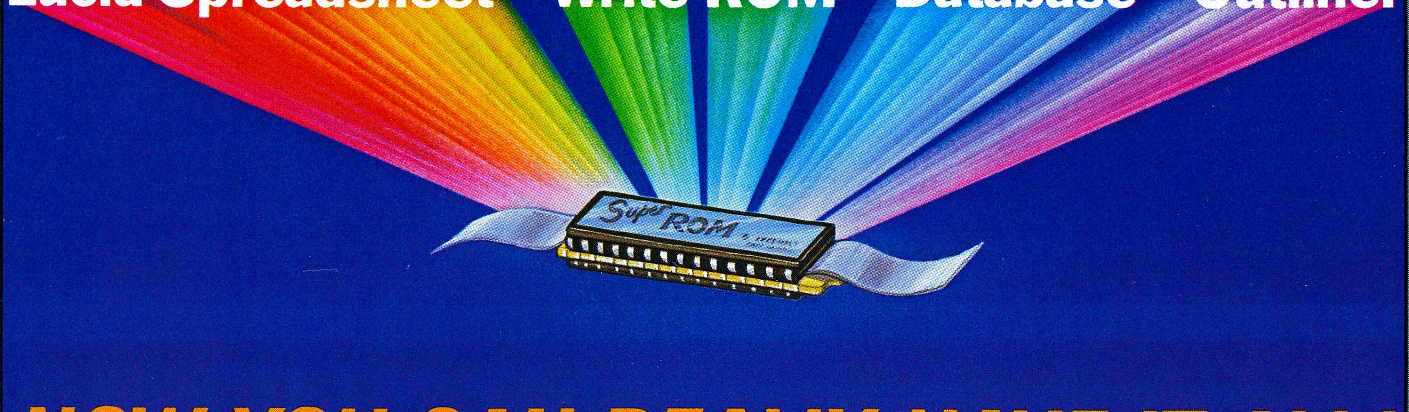
THE MODEL
Lapto

VOLUME 1, NUMBER 2

MAY 1987

SUPER ROM

Lucid Spreadsheet Write ROM Database Outliner



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Write ROM — the definitive word processor for the Model 100. Function key formatting or dot commands. Search and replace. Library feature — inserts words, phrases or whole documents into text from just a code. MAP lets you see a picture of your document. In all there are 60 features and functions. No one can claim faster operation. FORM lets you create interactive forms with on-screen prompts that you can answer from the keyboard. Nothing else for the Model 100 compares with the features of Write ROM. Exactly the same as the Write ROM sold as a single program. Infoworld says it "makes the Model 100 a viable writing unit … surpassed our highest expectations for quality and clarity."

Lucid Spreadsheet: This is the one PICO magazine says "blows Multiplan right out of the socket" and Infoworld performance rated as "excellent" and said "makes the Model 100 compute." Gives you features you cannot get with Lotus 123. Lets you build spreadsheets in your Model 100 that would consume 140-150K on a desktop. Program generating capability with no programming knowledge required. Variable column widths. Includes find and sort with function key control. It's fast, recalculates like lightning. No feature has been taken from the original, only new ones added.

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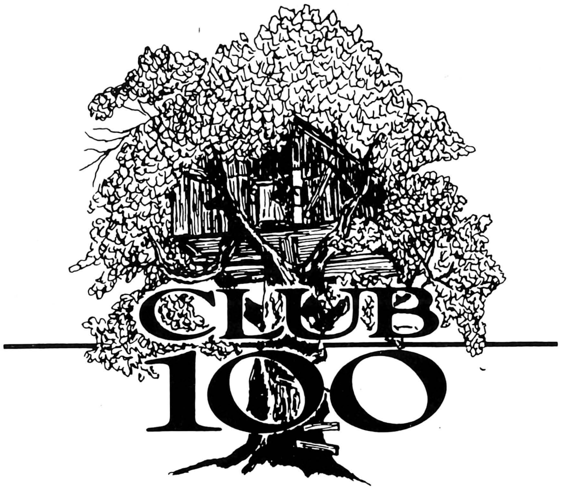

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***Until now...*notebook computer owners have had no united voice for influencing product development.**

***Until now...*there has been no nationwide discount buying program for hardware, software and peripherals.**

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VOLUME 1, NUMBER 2

Laptop User

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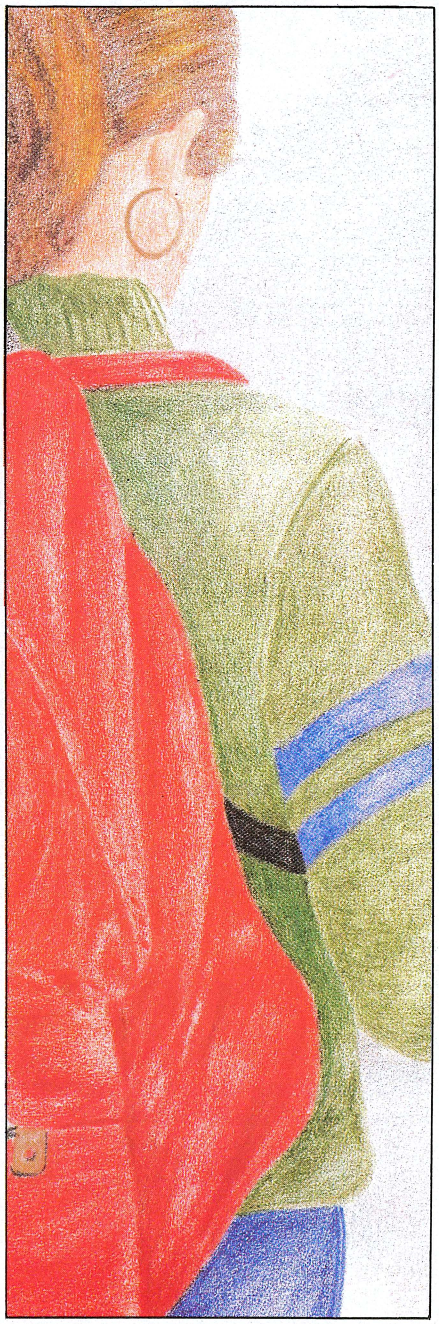

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Laptop User

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User groups may be eligible for affiliation with Club 100. Contact Sherrie Provoda at (617) 745-7027 for details.

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LAPTOPPING

Last month in this space I proclaimed the Toshiba 1100 Plus "the enemy." The statement has evoked a controversy.

Here's the irony: I'm a laptop enthusiast myself. At any given time I'm likely to have two or three MS-DOS laptops at home, at the office or in transit — loaners mostly, shipped to me for review. I was the first editor in the country to review the Data General One, the Hewlett-Packard 110, the Dulmont Magnum, the Epson Geneva and other laptops a few years ago when I worked at *Portable Computer* magazine. I covered portables from HP, Epson, DG and other vendors when I served as editorial director of the company that published *Portable 100.* And recently I served as editor of *Portable Computer Review,* an annual buyer's guide from CW Communications in Peterborough, New Hampshire.

I've surveyed MIS directors at Fortune 500 firms, and I've learned that there is a widespread perceived need for an IBM PC that can be carried easily. Beyond this dollars-and-cents issue is the undeniable sexiness of high-end laptops. They're at the cutting edge of miniaturization and technological innovation. They're hot-looking status symbols that proclaim their owners too important to while away their travel hours drinking martinis and flirting with flight attendants. When you carry a $3,500 laptop you've *arrived.*

All of this appeals to me. And I really do believe that people who rely on computers in their work become even more productive if they can carry their computers with them.

Still, I have reservations. The first is that PC-compatible laptops are really designed to be used in one location, folded up and transported, then used in a second location. As far as I'm concerned, that makes them transportable, not portable. Reinforcing this argument is the lack of MS-DOS software for portable applications. Schedulers, automatic dialers, expense-account organizers — these are what the business traveler needs. No one needs to cut payroll checks, recalculate an annual budget or update a mailing list aboard a 727.

The way I see it, the Tandy 102 and 200 will meet important needs as long as people travel. MS-DOS laptops fill needs that are less defined, less articulated, perhaps less real.

This isn't enough to make the 1100 Plus the enemy. But when a handful of companies specializing in Model 100 add-ons and software abandon the notebook computer market to develop new products for PC-compatible laptops, their creativity is lost to the rest of us. We all lose. And as MS-DOS laptops approach the 102 and 200 in price, the user base dwindles. There's less incentive for hardware and software developers to continue to extend our computers' usefulness. Eventually they'll be discontinued and disappear.

"You could perform a great service," the president of one company wrote to us, "by offering to guide the Model 100 user as he moves up to an MS-DOS machine." Well, we don't think the move is inevitable. You can pay more for a hot new laptop that offers more firepower, but you sacrifice usefulness and convenient portability. We think you lose more than you gain.

We like high-end laptops. We'll continue to review them and bring you news about technological developments. But we're not ready to put our 100s to pasture yet. Our job here is to make sure that your notebook computer's useful life is extended as far as possible.

J.D. Hildebrand

Feedback Loop

I have been searching for a magazine to supply the type of information and programs that I personally desire. Closest was *Portable Program Review* ... also *PCM,* but the Model 100 has become less than a second-class citizen to them. I had heard rumors of *Pico,* but it was only three months ago that I was able to verify its existence.

As you know, program listings are a severe problem for computer magazines. The type-from-magazine entry is tedious and error-prone, but the listing needs to be printed for understanding and modifying the program. Now a subscriber to *Pico,* I'm disturbed about its BBS-only policy for supplying program listings.

Many of the magazines for anchored [i.e., desktop] computers sell disks of the programs. Too expensive, if you're interested in only one of the programs.

I recommend that *Laptop User* print bar-coded listings. If could get us the hardware cheaply, the Cauzin Softstrip system might be even better.

For what they're worth, there's my opinions. Good luck with your (our?) venture.
Art Chatham
Camarillo, California

Thanks for bringing an important issue to light. We recognize the limitations of printed listings, which all too often create frustration and require lengthy debugging sessions instead of serving as a reliable source of free software. We've worked out a good system for eliminating errors in the listings (knock silicon), but even so, typing dozens of lines of code without an error is a challenge for our readers that we'd like to avoid.

We've always thought that bar code listings create two classes of readers, with scannerless subscribers at a disadvantage. But it's clear that the idea deserves more thought.

Thanks for the input. —Ed.

Congratulations! *Laptop User* looks slick and professional. Model 100 owners should be glad to get it and advertisers proud to advertise in it.

It was great to see a book with listings in it again.

I also like the "Laptop Users" section. It will go a long way toward creating a community for 100 owners — like the CompuServe Model 100 Forum does, only a little more permanent.
John P. Mello Jr.
MCIMAIL 264-1102

I would like to suggest a change in editorial direction that would make your magazine more attractive to us. Unlike you, we at Sigea do not consider the Toshiba 1100 Plus "the enemy." In fact, the emerging MS-DOS laptop computer is our primary market — and it will become more so as the prices of these excellent machines approach that of the Model 100 notebook computer.

I am surprised that you do not embrace this change in the portable computer market. I feel you could perform a great service — as well as broaden the appeal of *Laptop User* by offering to guide the Model 100 user as he moves up to an MS-DOS machine.

While much of your magazine should continue to address users of the Model 100 class, I feel you should be telling your readers about options available to them — new computers so your readers would know *what* to buy, pricing trends so they would know *when* to buy, and *software* to make MS-DOS portables as useful as possible.

Our experience with IBM is a good example of what can be done with the correct software to make up for an unfortunate physical design. This is the kind of news I feel you should be bringing to your readers, but you cannot so long as you consider the new standard in portables "the enemy."

I hope you find some food for thought here. I'd like to see *Laptop User* succeed, and I'd like to help.
Harry Brawley
Sigea Systems Inc.
Weston, Massachusetts

I just received the first issue of *Laptop User* in today's mail and I think it's terrific! I haven't had time to completely digest it all yet, but thoroughly enjoyed your editorial, especially the part about your wife, April, convincing you it could be done! We hope you every success.
Bill Templeton
CIS ID 75655,1056

I saw your full-page advertisement for Club 100 on the opening page of CW Communications' *Portable Computer Review.* I am very interested in your club and have several questions.

It is apparent from your advertisement that you have some good ideas and have invested some time and money. However, without giving any information as to who you are, what indication can you give of your ability to follow through on your intentions? What are your backgrounds? How have you come to embark on this project? No names appeared in the advertisement — why the anonymity?

Your advertisement made no mention of modem communications. Does this mean that modem communications is not part of Club 100? Why ignore an important built-in feature of the Model 100?

Does your group have any communication with similarly concerned local groups?

I look forward to hearing more about your club and wish you much success.
Daniel Cohen
Plymouth, New Hampshire

Club 100 was the brainchild of Richard Hanson, who has operated an online bulletin board and public-domain software *program for Model 100 owners for several years.*

When we formed Shoestring Publications and announced plans to publish Laptop User, *we saw that we could provide even more service to the notebook computer community by sponsoring a nationwide user group. We contacted Hanson, outlined our plans, and agreed to merge our two groups. Today Club 100 has more than 1,000 members from all over the U.S. The BBS and public-domain software services are maintained by Hanson on the West Coast; here in Massachusetts we publish the newsletter, provide carrying bags for portables, publish* Laptop User, *and arrange for discounts from commercial hardware and software vendors.*

It costs $30 to join Club 100; benefits are spelled out in advertisements appearing elsewhere in this issue of Laptop User. *—Ed.*

Let's work on Dynabook. It needn't be far off; in fact I think we're just about there. I'm typing this on my Tandy 102 and as I see it very little is missing. The size is right, keyboard layout fine, ports on the back adequate and five pounds is max weight. Only a few things are really missing.

First: the screen. Now, I really love my 102, even with its small screen. But it seems to me the screen could be expanded to the edge of the computer on three sides and down toward the function keys.

As a Mac user, I'm looking for windows and pop-up menus. It would seem quite straightforward to implement them. Each function key could have a pop-up menu: One press and you get the menu; each additional press moves you up an item. Press Enter when you've got the item you want.

Windows are also important, or maybe something like switcher so you could go directly from the word processor to telecommunications to a spreadsheet carrying the contents of the paste buffer. (Who said Apple invented the clipboard?)

And how about a mouse? See those spaces on either side of the Grph and Num keys? I suggest a thumb-actuated track ball. There should be a knock-out panel and sufficient wire so it could be located on the right or left. Shift is the mouse button. And let's make the bar code reader port double as a mouse port when you're working at a desk.

A megabyte of RAM should be okay for now, but let's leave room for 10 or more.

ROMs are our expansion slots. Let's have room for a half-dozen industry-standard ROMs. Forget an internal disk drive. The 100 brought us continuous memory and I don't want to go back.

The internal modem should move up to 2,400/1,200 bps.

The operating system is not so far off. I see a tweaking of the present system toward a Mac-type interface. Our present main menu is really a finder. We use suffixes instead of icons, but aside from that one could visualize adding the Mac finder features.

I can taste this machine, can't you? Let's get some more of the specs out and start beating on our favorite companies to bring it out ASAP.

Apple ... Tandy ... are you listening?

Jim Putnam
CIS ID 70346,1372

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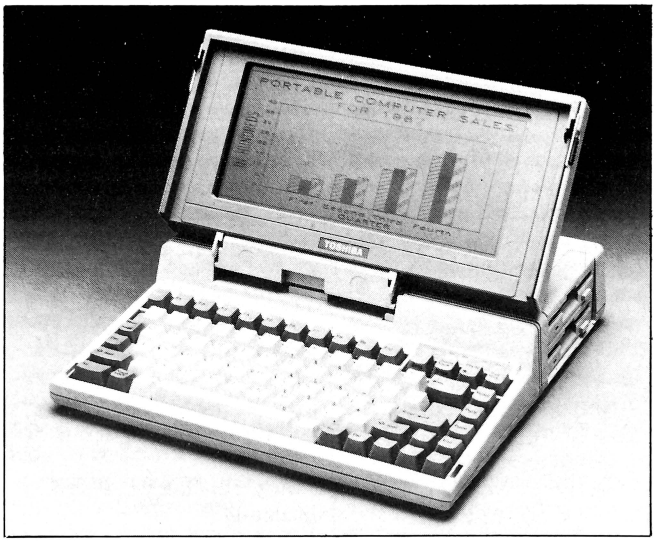
Laptop News



TOSHIBA IS RIGHT ON SCHEDULE

In the March/April premiere issue of *Laptop User,* we sagely predicted that Toshiba would introduce an enhanced liquid-crystal display (LCD) option for its IBM-compatible 1100 Plus laptop computer. The company announced such a display while our issue was on press.

Toshiba's super-twist LCD, which provides improved contrast over the earlier screen and makes the unit more competitive with similar laptops from Zenith and NEC, is now standard on the $1,999 256K 1100 Plus and the $2,399 640K model.

Toshiba has also announced that an upgrade program would allow current 1100 Plus owners to install the newly enhanced display.

"Super-twist technology allows more light to pass through [the screen] and bounce back, creating darker characters and improved screen contrast," says Tom Sherrard, senior product manager for Toshiba's Information Systems Division. "Some other types of displays are better in low-light conditions but require more power, which equates to heavier batteries or shorter battery life." The enhanced 1100 Plus is rated for up to eight hours of battery-powered operation.

The "other types of displays" may be a reference to the gas plasma display offered on Toshiba's PC AT-compatible quasi-laptop, the 3100. The 3100 is about the same size and weight as other laptops, but requires AC power. It seems to sell best to status-conscious executives who want the latest laptop toy to impress their colleagues ... not users who have real problems to solve.

Further information on Toshiba products is available from the Information Systems Division, 9740 Irvine Blvd., Irvine, CA 92718, (800) 457-7777, or (714) 583-3000 in California.

TRAVELING SOFTWARE SUPPORTS MS-DOS LAPTOPS

Traveling Software, the Bothell, Washington publisher of Sardine, Ultimate ROM II and other programs for the Model 100 family, has introduced LAP-LINK, a high-speed serial data transfer kit for PC-compatibles.

"LAP-LINK is truly a revolutionary product," says president Mark Epply. "It provides a fast, convenient, and easy-to-use solution to the communications problem which will set the standard to which all such products will be compared."

The program allows MS-DOS laptop owners to transfer information to the IBM PC and compatibles over a null modem. Traveling Software claims the unit works at 115,200 bits per second, and that throughput is increased by up to 30 percent through use of a "turbo" option.

NEC Home Electronics has signed an OEM agreement for distribution of LAP-LINK with its MultiSpeed laptop. The product is available from all NEC MultiSpeed dealers, including such chains as ComputerLand, MicroAge and Compushop.

Axonix Corp. of Salt Lake City has also entered into an OEM distribution agreement with Traveling Software to include LAP-LINK with all of its ThinWin and ThinPack hard disk and expansion systems for the Toshiba 1100 Plus.

The $129.95 product comes with a cable for connecting laptops to desktop computers.

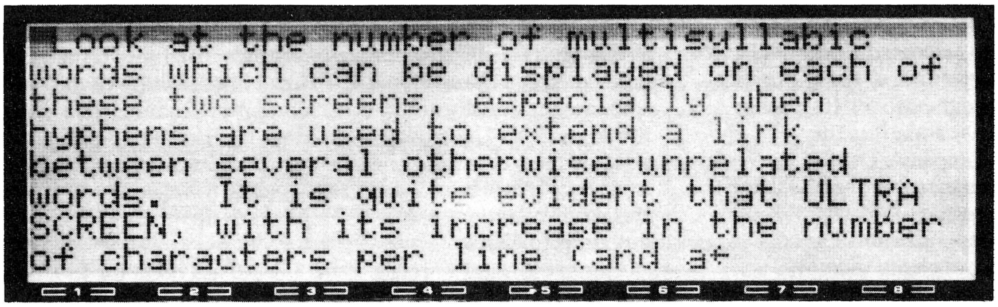
Traveling Software has also announced a bug in early versions of Sardine, its ROM-based spelling checker for the Model 100 family. According to the company, a problem sometimes arises when the laptop uses the built-in TELCOM program.

If you exit from Sardine abnormally, you run the risk of locking up your computer when you use the Term function key in TELCOM. There are two ways to exit from Sardine abnormally: by pressing the Reset key and by turning the computer off while working on a document in the Text option of the T-Word print menu.

To avoid the problem, always use the F8 key to exit from Sardine and return to the main system menu. Then, before using TELCOM, take the precaution of selecting TWORD+ and pressing F8 twice to return to the menu.

Traveling Software will also release an updated chip that will correct the problem. Contact the company at 19310 North Creek Parkway, Bothell, WA 98011, (800) 343-8080, or (206) 483-8088 in Washington.

Laptop Products



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Look at the number of multisyllabic
words which can be displayed on each of
these two screens, especially when
hyphens are used to extend a link
between several otherwise-unrelated
words.  It is quite evident that ULTRA
SCREEN, with its increase in the number
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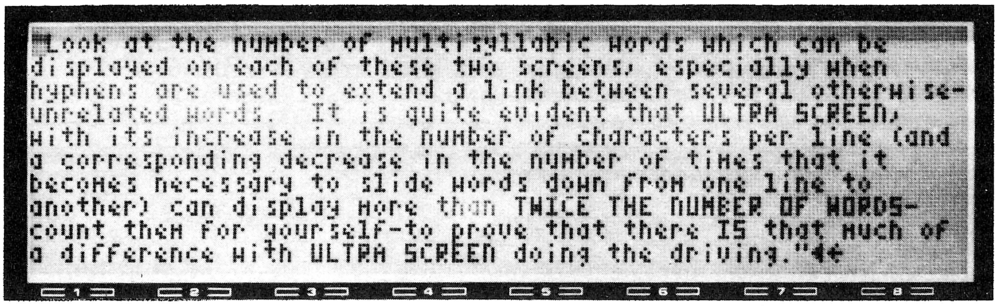

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"Look at the number of multisyllabic words which can be
displayed on each of these two screens, especially when
hyphens are used to extend a link between several otherwise-
unrelated words.  It is quite evident that ULTRA SCREEN,
with its increase in the number of characters per line (and
a corresponding decrease in the number of times that it
becomes necessary to slide words down from one line to
another) can display more than THICE THE NUMBER OF WORDS-
count them for yourself-to prove that there IS that much of
a difference with ULTRA SCREEN doing the driving."◄←
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ULTRASOFT DOUBLES 100'S SCREEN SIZE

UltraSoft Innovations, the Champlain, New York publisher of Disk Power and Text Power, has introduced an enhancement for the Model 100 and Tandy 102.

The company's UltraScreen displays 10 lines of 60 characters each on the laptop's LCD, increasing the number of characters on the screen from 320 to 600.

According to UltraSoft president Richard Eckerlin, the $29.95 program is written entirely in machine language. Available on either cassette or Tandy Disk Drive-compatible diskette, it occupies just 2.6K of RAM.

UltraScreen is completely compatible with the 100/102's built-in TEXT, BASIC and TELCOM, UltraSoft reports, and is relocatable in memory. The latter is a key feature, as it allows the program to reside reliably in the computer without cold-starting the computer when other machine-language programs are loaded and run.

"A growing number of people are frustrated by the limited amount of information that can be displayed without scrolling on the Model 100/102's screen," Eckerlin says. "For the first time, a program has been introduced that more than doubles the amount of text visible at one time."

A further advantage is that UltraScreen reduces the number of word-wraps — and therefore the amount of wasted space at the end of many text lines — by as much as one-third.

Contact UltraSoft Innovations, P.O. Box 247, Champlain, NY 12919, (514) 457-9293.

Circle No. 50

PROGRAM PERFORMS TIME-ZONE CONVERSION

TIME.BA is the name of the newest offering from Portable Programs in Glendale, California. The program enables rapid conversion of standard time in any time zone to that of any other time zone with the press of a function key.

Eight frames of locations in 24 time zones can be rapidly scanned for selection of referent and target time zones, according to Portable Programs' Henry Glover. The program displays side-by-side a.m. and p.m. times; listed cities and countries may be modified to suit the user's preference. Provisions are included for compensating for daylight savings time, as well.

The program also includes an a.m./p.m. digital clock, an easy-set program for the computer clock, a wake-up alarm, a timer and a stopwatch.

TIME.BA occupies about 15K of RAM, and doesn't run on laptops with less than 24K of memory. A cassette version retails for $23.50, and a Chipmunk-compatible disk edition for $28.50 (plus $2 shipping and handling for either version). Portable Programs provides a 30-day money-back guarantee.

Contact Portable Programs, 570 W. Stocker St., No. 211, Glendale, CA 91202, (818) 247-3166.

Circle No. 51

TRAVELING SOFTWARE RELEASES MACINTOSH LINK

Traveling Software, the Bothell, Washington publisher of Sardine and Ultimate ROM II, has introduced Mac DOS, a $95 hardware/software system that allows the Apple Macintosh series to read and write disks created with the Tandy Portable Disk Drive and Portable Disk Drive 2.

According to president Mark Eppley, Mac DOS gives Macintosh users access to the same capabilities IBM PC users have with Traveling Software's Lap DOS.

"There are a million Macintosh users out there," Eppley says, "and so far no one in the laptop market has developed products to serve them. Mac DOS provides a simple link that simplifies file transfer and data sharing. It lets you use the 100, 102, 200 or [NEC] PC-8201 as a portable companion to your Mac."

Mac DOS comes with a cable converter that allows the Tandy portable disk drive to plug into the Macintosh via its modem port. Traveling Software claims it lets users transfer programs and data at 19,200 bits per second.

Contact Traveling Software, 19310 North Creek Parkway, Bothell, WA 98011, (800) 343-8080, or (206) 483-8088 in Washington.

Circle No. 52

NODE BOOSTS RAM

Node Computer Systems of Nevada City, California, has released a potentially revolutionary new product for the Model 100, Tandy 200 and 102. The company's DataPac serves as a super-fast disk emulator, storing 128K or 256K of programs and data in nonvolatile memory.

The 10 by 1.5 by 1-inch DataPac plugs into the 102 or 200 via the system bus located on the back of the computer. Batteries inside the unit protect data contents, even when it is disconnected from the computer and stored for extended periods — four to six months, Node says.

Because the product stores information in RAM, it retrieves files very quickly. Users report that it loads a 15K TEXT file in less than one second.

The DataPac comes with a plug-in ROM chip that holds memory-management software, essentially a RAMdisk DOS. The ROM also adds search-and-replace, write-over mode, and word-counting functions to TEXT.

The 128K DataPac retails for $179; the 256K version costs $249.

Also available from Node is the RAMPac 32K, a tiny version of the DataPac that plugs directly into the Tandy 102's system bus. The 2.5 by 2.2 by .6-inch cartridges may be removed and replaced with more cartridges, much as disks may be removed from a disk drive and replaced with other disks containing different information. An internal lithium battery protects memory contents for up to five years.

Tandy 102 users require a small modification of the computer's main circuit board, which the user can perform, in order to use the RAMPac 32K. Node will perform the modification for $20.

RAMPacs retail for $49, or $139 in quantities of three.

Contact Node Computer Systems, 408 Broad St., Nevada City, CA 95959, (916) 265-4668.

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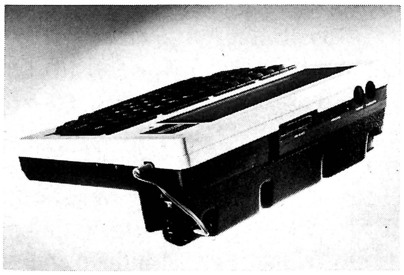

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PORTABLE COMPUTER SUPPORT GROUP

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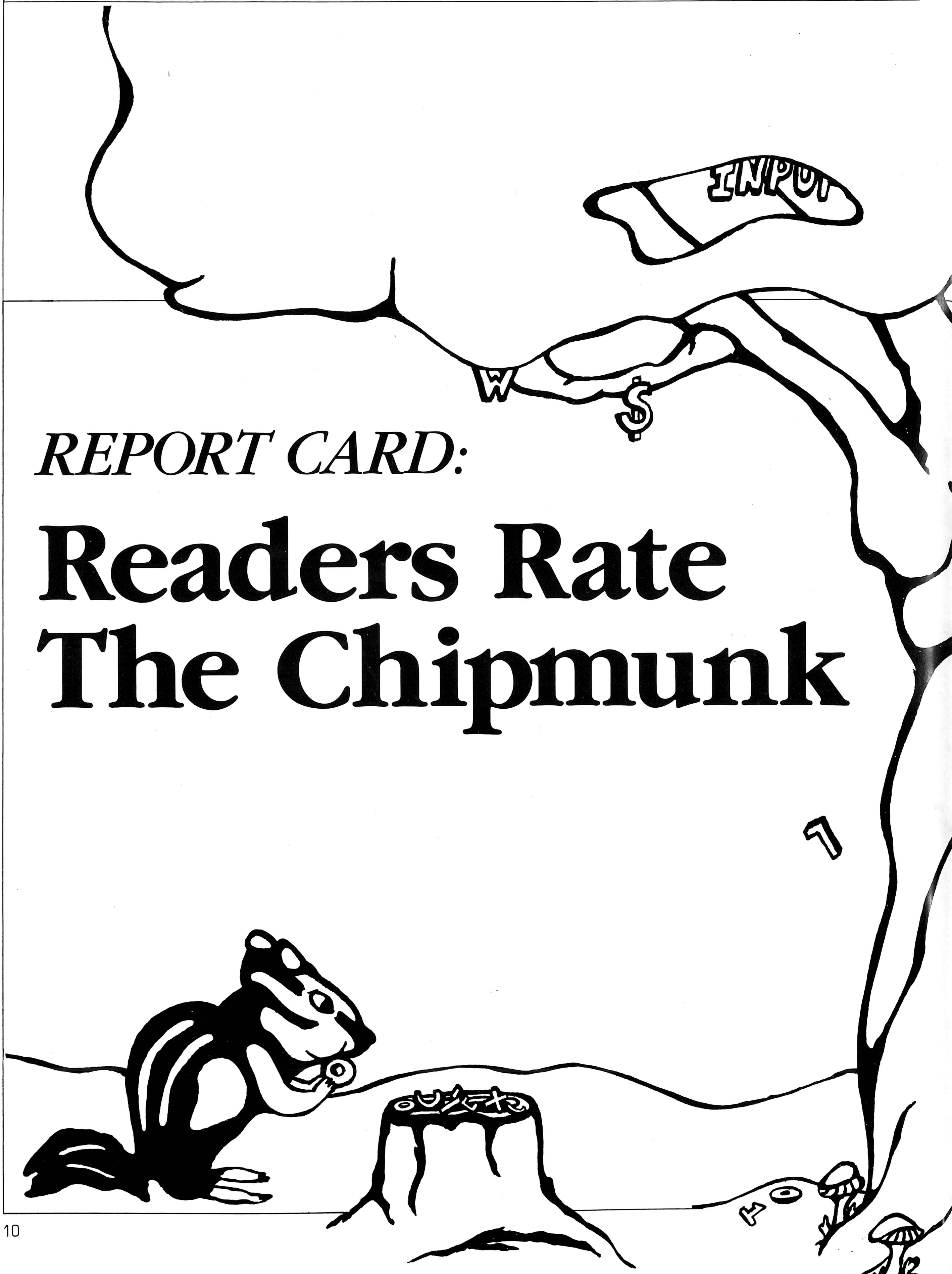
PLEASE CIRCLE NO. 10 ON READER SERVICE CARD

REPORT CARD:

Readers Rate The Chipmunk



TAB
GOTO
DATA
Q
5
A
T
1

It doesn't take much arm-wrestling with temperamental cassette drives and cables to convince laptop users that there must be a better way to store programs and data. For the longest time there wasn't. Today, however, there are a number of competitive disk drives on the market that provide pain-free storage of limitless amounts of information. Personal Integrated Computers offers the PIC Disc, which converts the 100 into a CP/M-compatible micro with 64K of contiguous RAM. Tandy offers the 100K Portable Disk Drive, which has since been replaced by the 200K Portable Disk Drive 2 in Radio Shack stores and catalogs. Traveling Software and Purple Computing sell similar drives that, like Tandy's, are manufactured by Brother International Corp.

Laptop User surveys show that the Tandy disk drive (TDD) is the best-selling portable drive on the market. But the unit has severe deficiencies that have been only partially addressed by third-party software vendors. Most of the problems are inherent in the drive's design: It attaches to the laptop's serial port, which limits speed and functionality. FLOPPY.CO, the operating system that Tandy distributes with the drive, doesn't offer many features. It basically makes the drive a high-speed cassette storage device, without the large-file and random-access capabilities that you expect from a disk drive.

These functions and more are available with the venerable granddad of the portable disk drive market, the Chipmunk, which is manufactured by Holmes Microsystems (formerly Holmes Engineering) and distributed by Portable Computer Support Group in Dallas.

One fact must be declared at the outset of any discussion of portable disk drive alternatives for the 100, 102 and 200: The Chipmunk is a superior drive. This point isn't subject to interpretation or hedging; it is a fact. "The Chipmunk is terrific," reports one user, who shares the unanimous opinion of all surveyed readers. "I've had problems with PCSG and with some of the software I've tried to use with it, but no problem at all with the Chipmunk itself. It is a superb product."

To account for Tandy's apparent greater popularity (and to be honest, *Laptop User* does not have exact sales figures from either vendor), consider the widespread availability of the TDD at thousands of local Radio Shack stores versus PCSG's mail-order-only distribution strategy, the TDD's lower price ($199 versus $399 for the Chipmunk), and the security implicit in buying from Radio Shack with its money-back guarantees, local service outlets, and brand-name recognition.

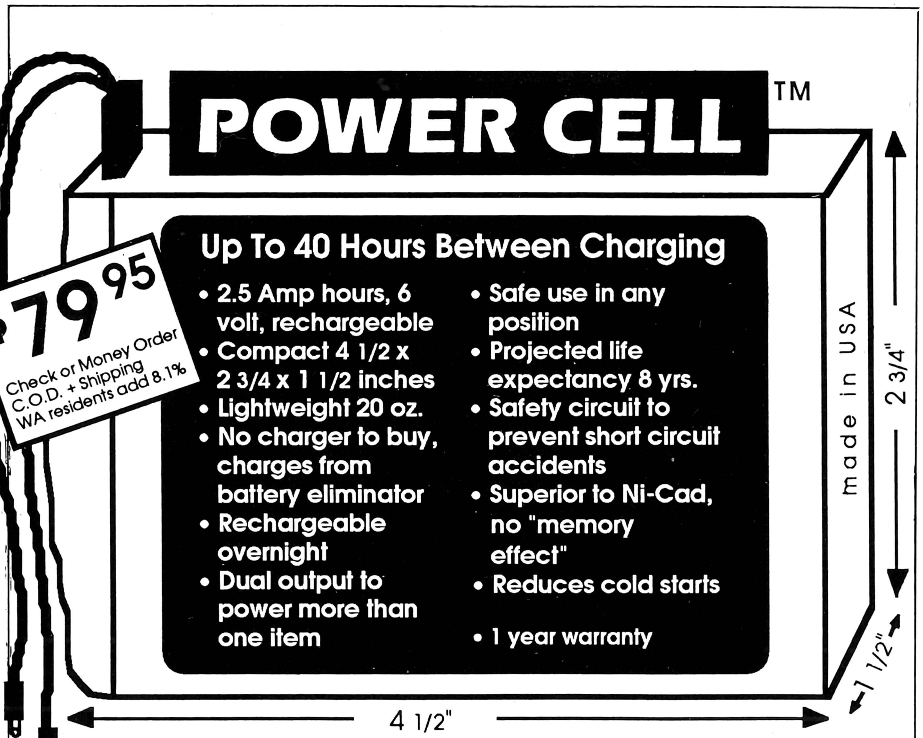
More importantly, because the TDD is available from Radio Shack, it has considerable bearing as a standard for third-party software developers. More third-party software works with the Tandy drive than with the Chipmunk. While most public-domain and user-written software can easily be converted to Chipmunk-compatible form, many commercial offerings — particularly machine-language programs and plug-in ROMs — simply can't take advantage of the Chipmunk's features.

SPECIFICATIONS

Like the TDD and the disk drives built into most high-end MS-DOS laptops, the Chipmunk uses 3.5-inch microfloppy disks. These cost more than the 5.25-inch disks used with desktop computers, but they're smaller, more rugged and more reliable. They're perfect for portable use.

Each Chipmunk disk holds 360K of programs and data. PCSG claims that this alone justifies the Chipmunk's higher price compared to the TDD because users need to purchase fewer disks to store the same amount of information. However, this argument is probably specious. Most users store information on disks in logical volumes: utilities on one disk, text editors and word processing documents on another, and so on. They don't keep adding data to a disk sequentially until it fills up. Even if you do save a little on disks, that's the least of the many reasons you might choose the Chipmunk over the TDD.

The Chipmunk plugs into the 100, 102 and 200 via the system bus. This means that you can't use a Chipmunk designed for the Model 100 with the Tandy 102. In fact, use of the Chipmunk with a 102 requires a small modification on the main printed circuit board. You can do it yourself, voiding the warranty on your computer, or ship it to PCSG. The company claims that it has become certified as a Radio Shack repair center, and that modifications performed by PCSG do not void Radio Shack's warranty on the computer.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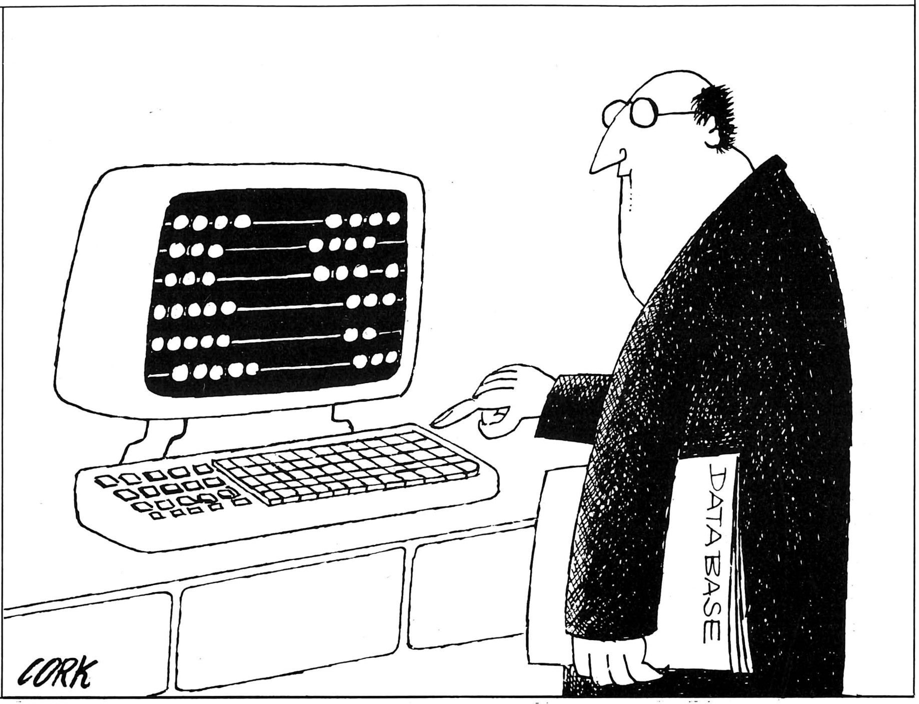
The drive's 7.5 by 5.5 by 2.5-inch case holds NiCad battery cells that are recharged whenever you use the unit with its supplied AC adapter. Also supplied are an operating system (CDOS), a cable for connecting to the computer, a short manual, and a number of BASIC utility programs provided on Chipmunk disks. The manuals for the programs are included as document files on the disk.

Users who give the Chipmunk itself a high rating think somewhat less of the bundled applications. "P-Base (the bundled database manager) is extremely difficult to fathom," says one user, who has owned his Chipmunk for about a year. "And it's absurd that you have to print your own manual from the disk. Printing from disk was exactly the function I was having trouble with!"

Another user believes the Chipmunk is insufficiently integrated with PCSG's other products. "I use Lucid Data for record-keeping," he reports. "But [the



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computer] stores just one year's records in RAM. The Chipmunk is supposed to work as fast as RAM, so I want to be able to temporarily store this year's data and load information from last year — use the drive as virtual memory. No way. Lucid is an outstanding program, but this limitation keeps my 100 from being all it could be. And the Chipmunk doesn't communicate as conveniently as I'd like with my IBM PC. I'm selling my Chipmunk and replacing it with a Tandy drive and TS-RANDOM."

Such dissatisfaction is the exception, not the norm.

OPERATION & BASIC EXTENSIONS

The Chipmunk is a programmer's dream. It adds commands to Microsoft's laptop BASIC that allow the 100, 102 or 200 to access the drive directly. Users access disk-stored files by adding 0: to the file name (much as they access cassette files by preceding them with CAS:). Plus, the Chipmunk accepts the keywords RANDOM, FIELD, GET, PUT, LOC, LOF, LFILES, DSKI$ and DSKO$. The two latter keywords are necessary only for compatibility with programs written for the Tandy Disk/Video Interface.

The commands are explained in adequate depth in the manual that comes with the Chipmunk. If you're familiar with these keywords in IBM PC BASIC, you'll have no trouble using them with the Holmes/PCSG drive.

Tips in the Chipmunk manual also show how to build code into your programs that detect whether the drive's internal batteries are low. This is a very handy feature.

The Chipmunk stores programs and data in a hierarchical structure similar to MS-DOS's subdirectory tree structure. With the Chipmunk, each subdirectory is called a "folder." As with MS-DOS, disk commands generally take place within the currently active folder. Users can load an entire folder's contents in the computer's memory, transfer files from one folder to another, or save the computer's memory contents into any folder.

USER RATINGS

Installation: Users rate the Chipmunk good to very good in installation. Just plug a supplied ribbon cable into the system bus. If you're using a Model 100, you'll get a new cover for the computer's expansion compartment with a cutout for the Chipmunk cable.

One caveat: Be sure to heed the manual's advice and wait 15 minutes or more for the Chipmunk to charge before it will work properly.

Ease of use: Surveyed users find the Chipmunk exceptionally easy to use. "There's a learning curve, as with any new product," one says, "but after a few cold starts you get the hang of it. On the plus side, all operations are logical and intuitive."

Continued on page 44.

PORTABILITY

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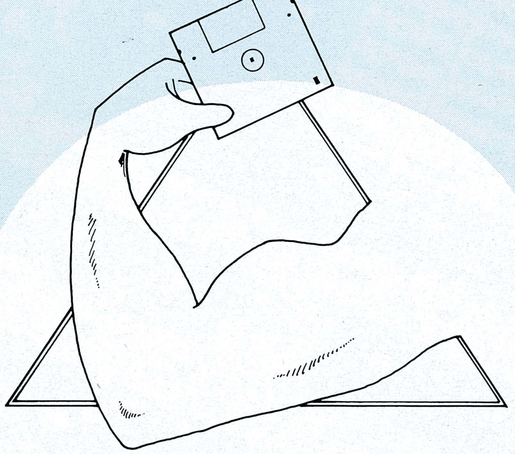

Eight months ago, we began selling POWR-DISK, the first software to give access to the Tandy Portable Disk Drive from Model 100/Tandy 200 BASIC and TEXT. Response was enthusiastic. Today, POWR-DISK still offers a great value in Disk-Drive software. But if you want ***real*** power for your Drive—you want POWR-DOS.

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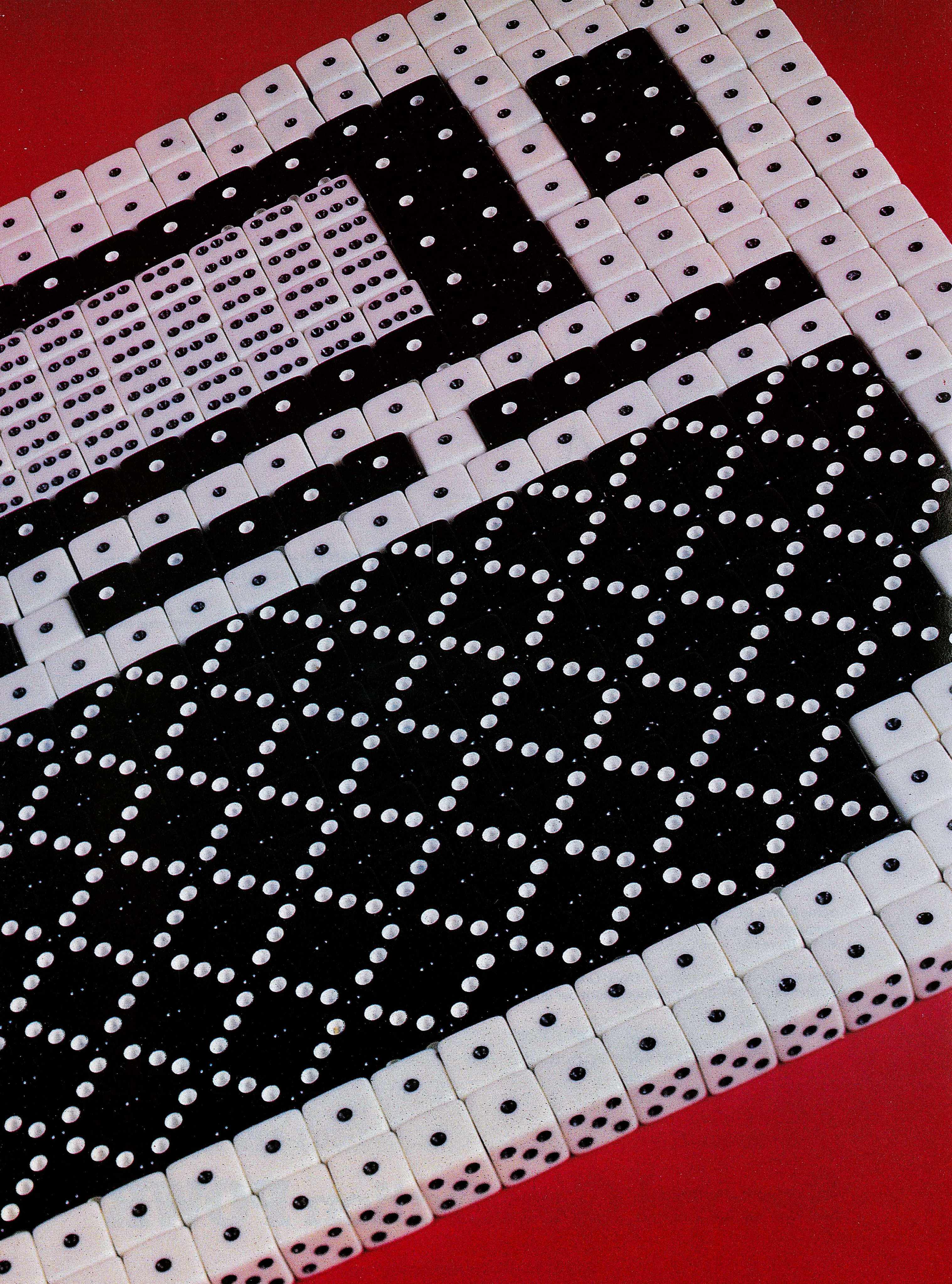


BY JOE WASSERMAN

Addictive Gaming

We don't think of Laptop User *as a game magazine. We know that most of you are more interested in making your portable earn its keep than turning it into an entertaining companion. But Joe Wasserman's GREED.BA is an exceptional program.*

"This is the first program I've written where the computer is actually playing against the user instead of just acting as a liaison between a player and what's happening on the screen," says Wasserman.

Don't overlook this program just because it's a game. Like us, you'll probably find it addictive. But buy some spare batteries — you may find yourself cursing the computer far into the night. —Ed.

The object of GREED is to be the first to score 10,000 points using the six computer dice. Points are scored as follows:

- Fives are 50 points.
- Aces are 100 points.
- Three aces is worth 1,000 points.
- Triples (three of a kind) of numbers two to six are the number times 100. So three 3s is 300, three 6s is 600, and so on.
- Six-dice straights count 1,500 points.
- If you roll a triple, any other die of the same number will count as 50, whether it's thrown on the same or subsequent rolls. So four 3s give you 350 points: 300 for the first three 3s, and 50 for the fourth one. Otherwise the two, three, four and six have no value.

PLAYING THE GAME

After the first throw you select the dice you want to keep; your points are totalled automatically. You have the option of throwing the remaining dice for more points or keeping what you have and passing the dice to the computer.

If you opt to throw and don't score any points then you lose the points accumulated on that roll and play passes to the computer. If you are lucky enough to use all six dice in one or more rolls then you can throw all six dice again to score more points. This is where you have to be careful not to get too greedy!

The more you roll, the more chances you have to score points. But any roll that yields no points wipes out all the points you've accumulated on that turn.

You must score at least 500 points to begin the game. After that you can stop with any number of points you like.

The four arrow keys and Enter are used to select which dice to keep and which to roll, much like draw poker. The up arrow is for triples, the left arrow is for 100s, the right arrow is for 50s and the down arrow is to roll the dice again. The Enter key passes the dice to the computer. You must hit the correct arrow key once for each 100 and/or 50 you want to keep.

Each player gets an equal number of turns. If you should reach 10,000 first (and were the first to roll) then the computer will have a last chance to beat you — and vice versa. If you're both over 10,000 then the higher score wins.

Since there is an advantage to going second if you are behind, the starting player will be alternated automatically as each new game is played. To help you remember who went first in the game an asterisk appears next to the player who started the game.

COMPUTER HELP

You're not entirely on your own. The computer assists you by alerting you to any points you have rolled. A message appears on the screen along with your dice letting you know what keys to press to collect points for 50s, 100s and triples. If you don't have any points, the computer will tell you so.

The program also reminds you if you have a triple from a previous roll. This gives you a chance to collect 50 points for a three if you have previously rolled three 3s.

If you press Enter, indicating that you want to pass, the computer will beep at you and question you if you have uncollected points on the screen.

The computer also beeps if you press the wrong key. And it won't let you roll if you have points and haven't taken at least one die.

The computer will *not* stop you from rolling if you have taken at least one die and left other points on the remaining dice. Why? Because many times it's a good strategy to keep aces and/or triples and throw a five in hopes of getting an ace.

STRATEGY

The computer already knows its strategy. You will develop yours as you play more often. It is a game of luck as well as skill in knowing when to stop and when to risk it all. In any given game you have just as good a chance as the computer to win.

The computer is programmed to play the way I would play. Its strategy covers as many situations as I could think of. Since there's virtually an unlimited number of ways various combinations of throws could affect the game, you may run across a case where the computer is not too bright, especially in the end game. I welcome any comments or suggestions that would make the computer play as humanly as possible.

Generally speaking, it seems best to take points from aces immediately. The computer usually rolls fives again, hoping that aces will come up or increasing the chances of scoring a triple. The computer also passes up triple 2s on the first roll, figuring it can make up the 200 points in subsequent rolls.

Address suggestions to me care of *Laptop User,* P.O. Box 712, Salem, MA 01970, or via CompuServe to ID 73117,3600.◀

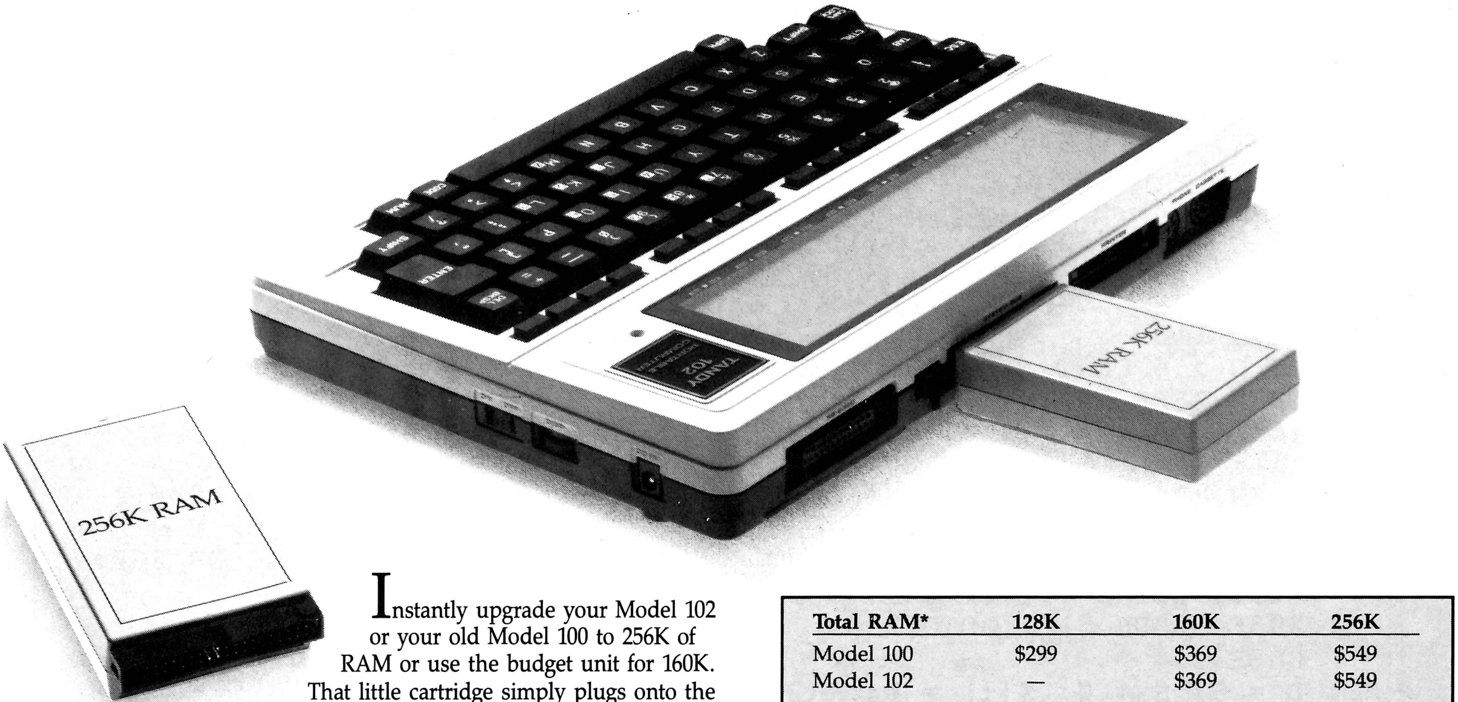
GREED.BA

```
GREED.BA
BY JOE WASSERMAN

  5 CLEAR: DEFINT A-Z: H = 1: IF
    MAXRAM = 61104 THEN POKE
    63277, PEEK(61983) ELSE POKE
    64634, PEEK(63791)
 10 CLS: PRINT @97, "GREED":
    PRINT @131, "A  Dice  Game
    by": PRINT @173, "Joe
    Wasserman": PRINT @215,
    "73117,3600": FOR Z = 1 TO
    4E3: NEXT
 15 CLS: PRINT @164, "Do you want
    to go first? Y/N ";: Y$ =
    INPUT$(1)
 20 CLS: PRINT @70, "This Roll":
    LINE(176,5) - (235,25),1,B
 25 IF Y$ <> "Y" AND Y$ <> "y"
    THEN PRINT @269, "*": GOTO
    235
 30 PRINT @229, "*"
 35 PRINT @230, CHR$(27) + "p" +
    " YOU " + CHR$(27) + "q":
    PRINT @270, " ME   ": D = 6: S
    = 0: R = 0: X(1) = 0: X(2) =
    0: L = L + 1
 40 IF MAXRAM = 61104 THEN POKE
    63277, PEEK(61983) ELSE POKE
    64634, PEEK(63791)
 45 FOR Z = 1 TO VAL(RIGHT$
    (TIME$,2)): DU = RND(1): NEXT
 50 V = 200: GOSUB 410: O = 0: F
    = 0: N = 0: T = 0: FT = 0
 55 IF X(1) AND X(1) <> 1 AND
    X(1) <> 5 THEN GOSUB 575
 60 GOSUB 420: IF D < 6 THEN 70
 65 FOR Z = 1 TO 6: IF D(Z) <> Z
    THEN 70: ELSE NEXT: PRINT @7,
    "You have a STRAIGHT": S = S
    + 1500: R = 1: GOSUB 500:
    GOTO 105
 70 FOR Z = 1 TO D
 75 IF Z <= D - 2 AND D(Z) = D(Z
    + 1) AND D(Z) = D(Z + 2) THEN
    PRINT @179, CHR$(152) +
    " Triple": T = T + 1: X(T) =
    D(Z): D(Z) = T + 6: D(Z + 1)
    = T + 6: D(Z + 2) = T + 6
 80 IF D(Z) = 1 THEN PRINT @164,
    CHR$(155) + " 100": O = O +
    1: D(Z) = 9
 85 IF D(Z) = 5 THEN PRINT @172,
    CHR$(154) + " 50": F = F + 1:
    D(Z) = 10
 90 IF D(Z) = X(1) THEN FT = FT +
    1: D(Z) = 11: PRINT @172,
    CHR$(154) + " 50"
 95 NEXT
100 IF T + F + FT + O = 0 THEN
    PRINT @167, "You have
    NOTHING": SOUND 16000,20:
    GOSUB 415: GOSUB 505: GOSUB
    515: GOTO 235
105 PRINT @246, CHR$(153) +
    " roll": PRINT @255, "<CR>
    pass"
110 I$ = INKEY$: IF I$ = "" THEN
    DU = RND(1): GOTO 110
115 IF T > 0 AND I$ = CHR$(30)
    THEN 150
120 IF O > 0 AND I$ = CHR$(29)
    THEN 165
125 IF FT > 0 AND T = 0 AND I$ =
    CHR$(28) THEN 180
130 IF F > 0 AND I$ = CHR$(28)
    THEN 195
135 IF R = 1 AND I$ = CHR$(31)
    THEN R = 0: GOTO 210
140 IF I$ = CHR$(13) THEN 220
145 BEEP: GOTO 110
150 S = S - 100 * X(T) * (X(T) <>
    1) - 1000 * (X(T) = 1): N = N
    + 3: R = 1
155 FOR X = 1 TO D: IF D(X) = 6 +
    T THEN H=0: GOSUB 495: H = 1
160 NEXT: T = T - 1: GOSUB 500:
    GOTO 110
165 FOR X = 1 TO D
170 IF D(X) = 9 THEN S = S + 100:
    N = N + 1: O = O - 1: R = 1:
    D(X) = 1: H = 0: GOSUB 495: H
    = 1: GOSUB 500: GOTO 110
175 NEXT
180 FOR X = 1 TO D
185 IF D(X) = 11 THEN S = S + 50:
    FT = FT - 1: N = N + 1: R =
    1: D(X) = 5: H = 0: GOSUB
    495: H = 1: GOSUB 500: GOTO
    110
```

256K RAM FOR THE M102 & M100

Memory doesn't erase when you unplug it —
Buy multiple cartridges and carry them with you anywhere!



Instantly upgrade your Model 102 or your old Model 100 to 256K of RAM or use the budget unit for 160K. That little cartridge simply plugs onto the back of the Model 102. That's all there is to it. Buy several if you like, because they don't lose your files when you unplug them. (For the older type Model 100 we have a special shape that goes inside the little back compartment).

Like eight Model 102's in one.

You then have 8 banks of RAM of 32K each. The additional seven banks also work just like your Main Menu. Push a function key: you are in the second bank. Push again, the third and so forth until you are back to your original bank. Its built-in NiCad battery recharges right from the Model 102 and is guaranteed for a full year.

Copy a file from bank to bank with a function key.

Each bank is like having another Model 102. All the built-in programs and snap-in ROMs appear and work in all banks. Your widebar cursor moves from file to file and you just press ENTER.

Data files in excess of 220K.

You aren't limited to working with banks of 32K each. The ROM software included has extensions to BASIC that allow modification of programs to write and read data throughout the entire 256K. Data files can be created using all available memory, appearing to the user as one continuous 256K of RAM.

More features.

Rename or kill any file. Set the date, day and time with function key ease. Even use non-Radio Shack printers without those tricky dipswitch settings. Whenever you take out the snap-in ROM it leaves a tiny program that lets you switch banks just by pressing ENTER.

Total RAM*	128K	160K	256K
Model 100	$299	$369	$549
Model 102	—	$369	$549

**Including original 32K*

The complete system.

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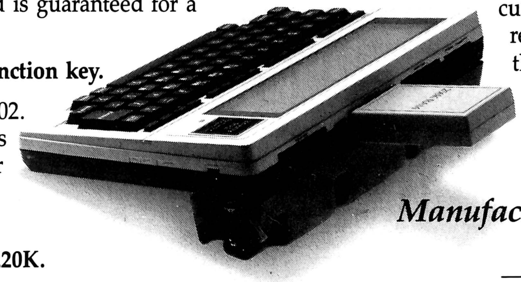

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MasterCard VISA

PLEASE CIRCLE NO. 9 ON READER SERVICE CARD

GREED.BA

```
190 NEXT
195 FOR X = 1 TO D
200 IF D(X) = 10 THEN S = S + 50:
    F = F - 1: N = N + 1: R = 1:
    D(X) = 5: H = 0: GOSUB 495: H
    = 1: GOSUB 500: GOTO 110
205 NEXT
210 D = D - N: IF T > 0 THEN X(1)
    = 0: X(2) = 0
215 IF D = 0 THEN D = 6: X(1) =
    0: X(2) = 0: GOTO 50: ELSE 50
220 IF S + Y < 500 THEN BEEP:
    GOTO 110
225 IF O > 0 OR T > 0 OR F > 0
    THEN BEEP: PRINT @206, "Are
    You Sure Y/N ";: E$ = INPUT$
    (1): IF E$ = "Y" OR E$ = "y"
    THEN 230 ELSE PRINT @206,
    SPACE$(16): GOTO 110
230 IF S>0 THEN Y = Y + S: PRINT
    @235, USING "#####"; Y: GOSUB
    505: GOSUB 515: GOTO 235:
    ELSE 110
235 D = 6: S = 0: X(1) = 0: X(2)
    = 0: M = M + 1: PRINT @230,
    " YOU ": PRINT @270, CHR$(27)
    + "p" + " ME   " + CHR$(27) +
    "q"
240 V = 240: GOSUB 410: T = 0: O
    = 0: F = 0: FT = 0: N = 0: S1
    = 0
245 IF X(1) AND X(1) <> 1 AND
    X(1) <> 5 THEN GOSUB 575
250 GOSUB 420
255 IF D < 6 THEN 265
260 FOR Z = 1 TO 6: IF D(Z) <> Z
    THEN 265: ELSE NEXT: PRINT
    @8, "I Have a STRAIGHT": S =
    S + 1500: GOSUB 500: GOSUB
    415: D = 0: FOR Z = 1 TO 6:
    D(Z) = 0: NEXT: GOTO 350
265 FOR Z = 1 TO D
270 IF Z <= D - 2 AND D(Z) = D(Z
    + 1) AND D(Z) = D(Z + 2) THEN
    T = T + 1: X(T) = D(Z): D(Z)
    = T + 6: D(Z + 1) = T + 6:
    D(Z + 2) = T + 6
275 IF D(Z) = 1 THEN O = O + 1:
    D(Z) = 9
280 IF D(Z) = X(1) THEN FT = FT +
    1: D(Z) = 11
285 IF D(Z) = 5 THEN F = F + 1:
    D(Z) = 10
290 NEXT
295 FOR Z = 1 TO D: IF D(Z) = 9
    THEN D(Z) = 1 ELSE IF D(Z) =
    11 THEN D(Z) = X(1) ELSE IF
    D(Z) = 7 THEN D(Z) = X(1)
    ELSE IF D(Z) = 8 THEN D(Z) =
    X(2)
300 NEXT
305 IF X(1) = 2 AND X(2) = 0 AND
    S = 0 AND (O > 0 OR F > 0)
    AND O + F <> 3 AND FT = 0 AND
    C + O * 100 + F * 50 + FT *
    50 < 9800 THEN X(1)=0:T=0
310 IF T THEN S1 = S1 - 100 *
    X(T) * (X(T) <> 1) - 1000 *
    (X(T) = 1) + FT * 50: N = N +
    3 + FT: G = X(T): GOSUB 560:
    T = T - 1: FT = 0
315 IF T THEN 310
320 IF FT THEN S1 = S1 + FT * 50:
    N = N + FT: FT = 0: G = X(1):
    GOSUB 560
325 IF O = 0 THEN 335
330 S1 = S1 + O * 100: N = N + O:
    O = 0: G = 1: GOSUB 560
335 IF S1 > 0 THEN S = S + S1:
    GOSUB 500: GOSUB 415: GOTO
    350
340 IF F THEN FOR Z = 1 TO D: IF
    D(Z) = 10 THEN S = S + 50: N
    = N + 1: F = F - 1: D(Z) = 5:
    G = 5: GOSUB 560: GOSUB 500:
    GOSUB 415: GOTO 350: ELSE
    NEXT
345 PRINT @208, "I Have NOTHING":
    SOUND 16000, 20: GOSUB 415:
    GOSUB 505: GOSUB 515: GOTO 35
350 IF S + C + F * 50 < 500 THEN
    GOSUB 395: GOTO 240
355 IF S + C + F * 50 >= 1E4 AND
    S + C + F * 50 - 300 > Y THEN
    GOSUB 395: IF D = 6 THEN 240:
    ELSE GOSUB 400: C = C + S:
    GOSUB 510: GOSUB 505: GOSUB
    515: GOTO 35
360 IF Y = C AND Y >= 1E4 AND S +
    F * 50 < 400 THEN GOSUB 395:
```

```
    GOTO 240
365 IF Y >= 1E4 AND Y > C THEN
    GOSUB 395: GOTO 240
370 IF C = 0 AND S + F * 50 >=
    500 THEN GOSUB 395: IF D = 6
    THEN 240: ELSE GOSUB 400: C =
    C + S: GOSUB 510: GOSUB 505:
    GOTO 35
375 IF S >= 1000 AND D - N <= 3
    OR S >= 1500 THEN GOSUB 395:
    IF D = 6 THEN 240: ELSE GOSUB
    400: C = C + S: GOSUB 510:
    GOSUB 505: GOSUB 515: GOTO 35
380 IF D - N >= 3 OR S < 400 THEN
    GOSUB 395: GOTO 240
385 IF Y >= 9000 AND Y - C >=
    2000 THEN GOSUB 395: GOTO 240
390 GOSUB 395: IF D = 6 THEN 240:
    ELSE GOSUB 400: C = C + S:
    GOSUB 510: GOSUB 505: GOSUB
    515: GOTO 35
395 IF F + N <> D THEN D = D - N:
    RETURN
400 D = 6: N = 0: X(1) = 0: X(2)
    = 0: IF F = 0 THEN RETURN
405 G = 10: GOSUB 560: S = S + F
    * 50: GOSUB 500: GOSUB 415:
    RETURN
410 FOR Z = 0 TO V STEP 40: PRINT
    @Z, SPACE$(27): NEXT: RETURN
415 FOR Q = 1 TO 1200: NEXT:
    RETURN
420 FOR X = 1 TO D: S(X) = RND(1)
    * 6 + 1: NEXT
425 A = 1: FOR Z = 1 TO 6: FOR X
    = 1 TO D
430 IF S(X) = Z THEN D(A) = Z: A
    = A + 1
435 NEXT X, Z: FOR Z = D + 1 TO
    6: D(Z) = 0: NEXT
440 FOR X = 1 TO D: W = X * 24:
    GOSUB 495: ON D(X) GOSUB 445,
    450, 455, 460, 465, 470:
    NEXT: RETURN
445 GOSUB 475: RETURN
450 GOSUB 480: RETURN
455 GOSUB 475: GOSUB 480: RETURN
460 GOSUB 480: GOSUB 485: RETURN
465 GOSUB 460: GOSUB 475: RETURN
470 GOSUB 460: GOSUB 490: RETURN
```

```
475 LINE(W + 7,17) - (W + 9,19),H
    + 1,BF: RETURN
480 LINE(W + 2,22) - (W + 4,24),H
    + 1,BF: LINE(W + 12,12) - (W
    + 14,14),H + 1,BF: RETURN
485 LINE(W + 2,12) - (W + 4,14),H
    + 1,BF: LINE(W + 12,22) - (W
    + 14,24),H + 1,BF: RETURN
490 LINE(W + 2,17) - (W + 4,19),H
    + 1,BF: LINE(W + 12,17) - (W
    + 14,19),H + 1,BF: RETURN
495 LINE(X * 24,10) - (X * 24 +
    16,26),H,BF: RETURN
500 PRINT @112, USING "####"; S:
    RETURN
505 PRINT @112, "    ": RETURN
510 PRINT @275, USING "#####";
    C;: SOUND 12538,10: RETURN
515 IF C < 1E4 AND Y < 1E4 THEN
    RETURN
520 IF Y >= 1E4 AND Y > C AND M =
    L THEN 535
525 IF C >= 1E4 AND C > Y AND M =
    L THEN 540
530 RETURN
535 V = 240: GOSUB 410: PRINT
    @124, "Congratulations You
    Win": K = K + 1: GOTO 545
540 V = 240: GOSUB 410: PRINT
    @124, "Sorry! I Won this
    Game!": J = J + 1
545 PRINT @12, "Computer"; J:
    PRINT @55, "Human"; K: PRINT
    @168, "Play Again Y/N ";: I$
    = INPUT$(1)
550 IF I$ <> "Y" AND I$ <> "y"
    THEN MENU ELSE L = 0: M = 0:
    C = 0: Y = 0: H = 1: IF Y$ =
    "Y" OR Y$ = "y" THEN Y$ =
    "N": GOTO 20
555 Y$ = "Y": GOTO 20
560 H = 0: FOR X = 1 TO D
565 IF D(X) = G THEN W = X * 24:
    GOSUB 495: ON D(X) GOSUB 445,
    450, 455, 460, 465, 470, , ,
    , 465
570 NEXT: H = 1: RETURN
575 FOR Z = 40 TO 60 STEP 10:
    LINE(Z,0) - (Z + 6,6),1,BF
580 NEXT: PRINT @11, X(1): RETURN
```

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*Macintosh Plus owners will need the Mini-8 to DB9 connector cable to use **MacDOS**.

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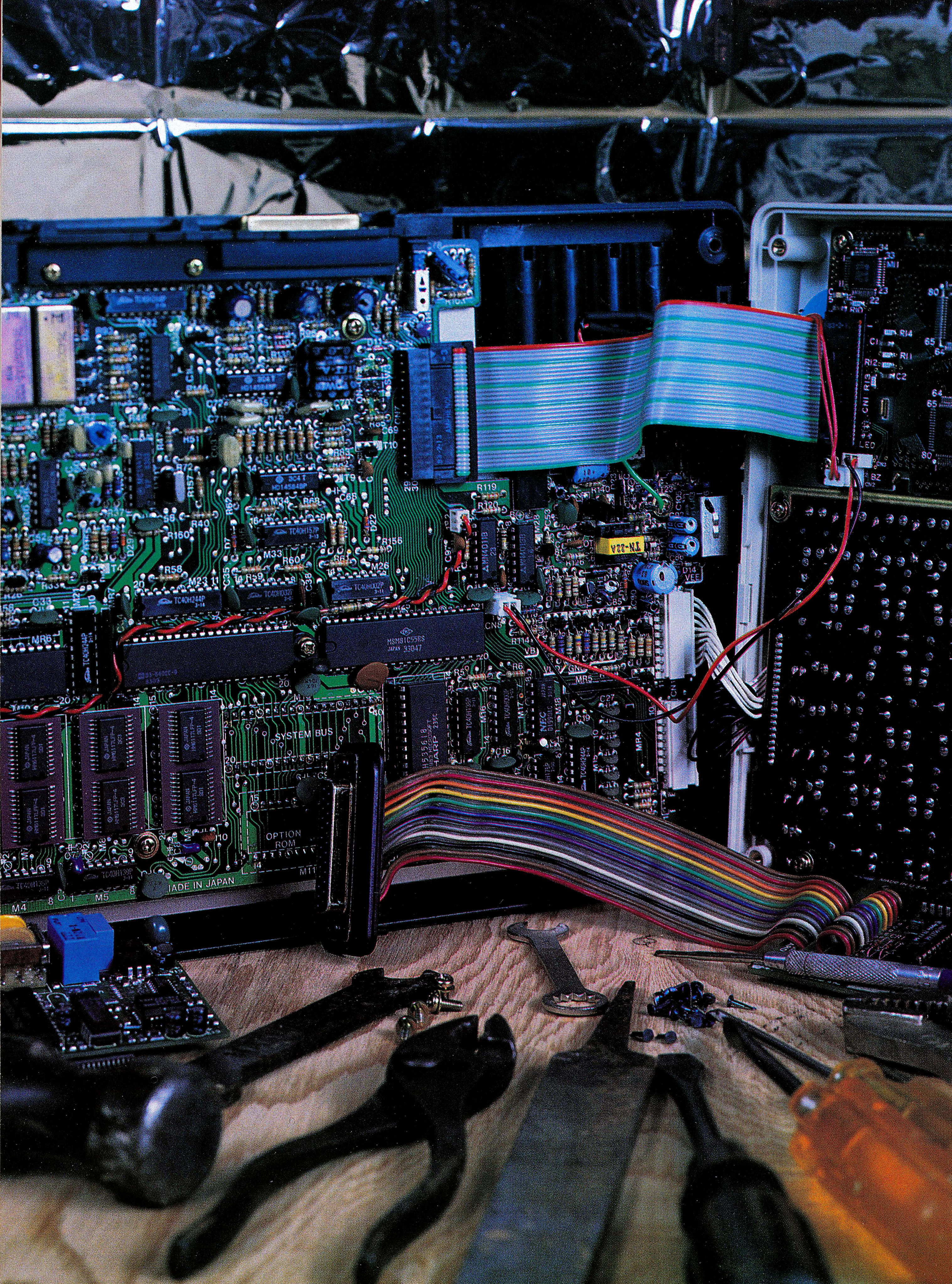

BY DAVID P. SUMNER

Fine-Tuning Model 100 BASIC

The Model 100 has a powerful built-in BASIC. Surprisingly, however, one fundamental feature is missing. Suppose you have just written a lengthy program and now want to delete lines 120 through 395. Good luck —Model 100 BASIC has no command to do this.

What to do? Since typing in a line number followed by pressing Enter will delete a single line, you could delete each line in this manner. Talk about tedious! Or you could use BASIC's Edit function, defining and deleting the line range with F7 and F6. For a lengthy program, this can take some time. Moreover, if your computer is short of free memory you may get an ?OM error when attempting to use Edit.

Or you could use the 59-byte program that accompanies this article.

GETTING STARTED

First you need to type in the BASIC program shown in Listing 1. It creates a machine-language program called DELETE.CO, which is the program that actually does the deleting. Type carefully: The program does some checking to see that you typed the data statements correctly, but it's better to be safe than sorry. Mistyped data statements could lead to data loss or even a cold start.

Save the program as DELETE.BA. When you run it, it produces a machine-language program that loads directly "beneath" whatever is currently in your computer — including other machine-language programs. If you like, you can make several different versions of DELETE.CO for use in different circumstances. For instance, if you use the Tandy Disk/Video Interface, you might want a version of DELETE.CO that would load underneath the DVI program. If you have no other machine language program in your Model 100 (or Tandy 102), then DELETE.CO will begin at address 62901 and extend to 62959.

Now you're ready to RUN DELETE.BA. When the program finishes (you get the *Ok* prompt) press F8 and take a look at the menu. If all went well, you will see a new program called DELETE.CO listed there. You don't need DELETE.BA anymore unless you want to create another version of the .CO file that will load in a different location. However, I suggest that you keep a copy of DELETE.BA on tape or disk for future use. Keep in mind that each program produced by DELETE.BA will have the name DELETE.CO, so you should rename the first copy of the machine-language program before you create a second.

USING DELETE.CO

DELETE.CO is simple to use. For the purposes of this example I will assume that you don't have any other machine-language programs in your computer. Type in the nonsense program shown in Listing 2.

Suppose you want to delete lines 30 through 62. First make sure you have cleared enough memory for DELETE.CO by typing:

```
CLEAR 256,62901
```

Type RUNM "DELETE" <Enter>. The display will clear and a greater-than symbol will appear at the top of the screen. Now just type in the range of lines you want to delete. For instance, you could type 30,62 and lines 30 to 62 will vanish.

The line numbers you type don't have to exist. For example, if you were to type 28,67 you would still delete lines 30 through 62. Responding with 0,65535 will delete your entire program.

If you RUNM DELETE accidentally and really don't want to delete any lines, just press the Enter key when you see the prompt. You will get a meaningless ?MO error, but no lines will be deleted.

TIPS

You don't have to type RUNM "DELETE" each time you want to delete a line range. If you are sure that DELETE.CO is already loaded, you can just CALL it. For this example, you would just type CALL 62901. But be sure that

Listing 1: DELETE.BA

```
   1 REM DELETE.CO Maker
   2 REM By David P. Sumner, 1987
  10 X = HIMEM-59: CLEAR 256,X
  20 ST = HIMEM: EN = ST + 58: CK = 0
  25 FOR I = ST TO EN
  30   READ X: POKE I,X: CK = CK + X
  40 NEXT I
  45 IF CK <> 7588 THEN PRINT "Error In DATA Statements": BEEP:
     END
  50 JC = ST + 37
  60 H = INT(JC / 256): L = JC - 256 * H
  70 POKE ST + 33, L: POKE ST + 34, H
  80 X = HIMEM: SAVEM "DELETE",X, X + 58, X
 100 END
1000 DATA  42, 122, 246,  35, 124, 181, 192,  62,  12, 231
1010 DATA  62,  62, 231, 175,  55, 245, 205,  68,  70, 215
1020 DATA 205, 151,  18, 213, 207,  44, 205, 151,  18, 205
1030 DATA  40,   6, 218,   0,   0,  96, 105, 227, 235, 205
1040 DATA  40,   6, 225, 197,  80,  89, 223, 210, 115,   5
1050 DATA  33, 255, 255,  34, 122, 246, 195,  70,   4
```

DELETE.CO is loaded or this CALL will have unpredictable results to say the least.

It can simplify things to assign the string RUNM "DELETE" to a function key so you don't have to type it every time you want to delete a range of lines. All you have to do is type KEY6, "RUNM" + CHR$(34) + "DELETE" + CHR$(34). Note the CHR$(34), which adds quotation marks to the string.

Now when you press F6 the string RUNM "DELETE" will appear on the screen. You still have to press Enter yourself. I think that for function keys of this sort — where the effect is to run a machine-language program — it is better not to include the Enter character at the end of the definition. The function key assignment shown above lets you recover easily if you accidentally press F6. However, if you want to include the Enter key, just add + CHR$(13) to the end of the definition.

HACKER'S CORNER

DELETE.BA is a simple BASIC program that reserves the necessary memory for DELETE.CO and then inserts the appropriate machine-language code. It is DELETE.CO that actually does the line deletions.

You know that if you Enter just the number of a line, BASIC will delete that line. DELETE.CO uses the portion of the BASIC ROM that performs this deletion. After reading the user's input, the program searches the BASIC program and finds where the first line begins and the second line ends. It then sets things up so that BASIC will think this entire portion of the program is a single BASIC line. Then it jumps into the ROM at the point where the deletion routine resides. The BASIC ROM does the rest for free.

For more details on the ROM routines used in DELETE.CO and other routines in the Model 100 ROM you can read "Inside the Model 100," which I wrote for the December 1983 edition of *80 Micro*. An elaboration of this ROM map resides on the Model 100 Forum on CompuServe.◀

David Sumner is president of Micro Demon, a leading developer of utilities and applications software for the Model 100.

Listing 2

```
 10 PRINT "HELLO"
 20 GOTO 20
 30 BEEP
 40 BEEP
 50 X = X + 1
 62 Z = Z + 6
 75 A = SIN(2)
103 LPRINT C
```

BY MARK BITTMAN

Buying an NLQ Printer

Far from precipitating the advent of the prophesied paperless office, the widespread installation of the desktop microcomputer in business has had the opposite effect: It has increased the worker's ability to generate more pages, more quickly.

This ability — and the worker's appetite for exploiting it — have spawned an industry or two. The printer market, which saw 876,000 units sold in 1976, has grown to nearly 6.2 million units in 1986, according to Susan Ellenberger, an analyst at market research firm Dataquest in San Jose, California. And computer users, who consumed printer paper at the rate of 1.97 million tons per year in 1977, used 3.36 million tons during 1986, says Harold Cody, an editor at Concord, California market research firm Communication and Information Services. Consumption in 1995 will be 5.49 million tons, according to CIS's report, *U.S. Demand for Paper Grades, 1986 to 1995.*

The theory, which has received ample empirical corroboration over the past decade of microcomputer use in business, is that in return for increasing the user's efficiency at performing certain tasks, the computer inevitably imposes a burden of communication. Plans must be transmitted to management, policy statements to subordinates. Documents may be polished indefinitely (each revision requiring a fresh printout for editing and proofreading) before they are printed in final form and routed to their recipients. A simple Multiplan or Lucid worksheet is capable of yielding up an unthinkable number of printed reports.

So although in the jargon of the computer era it is properly termed a peripheral, the printer occupies no peripheral place in business. It lends data tangibility, mobility, and legibility. Printouts can be stored, retrieved, copied, mailed, transmitted via facsimile, and initialed to provide an audit trail. They are subject to folding and spindling and mutilating. The pundits who predict computers will slow the flow of paper through the office do not see the office clearly. Hard copy (as the printout is called by those same computer cognoscenti who proclaim printers peripherals) is here to stay.

A DICHOTOMY OF NEEDS

At least part of the growth in the printer market may be attributed to a dichotomy of needs that leads some people to purchase two printers where one might be expected to suffice. The need for high-speed drafts for personal or internal use conflicts with an equally compelling need for high-quality hard copy for correspondence outside the company or department.

The first need is easily met by any of more than 700 inexpensive dot-matrix printers currently on the market, most of which are capable of printing at 200 characters per second (cps) or faster. The second requires a letter-quality printer, which produces documents indistinguishable from typed text at speeds of 15 to 60 cps.

These two technologies are fundamentally different. Dot-matrix printers form characters and graphics by pressing patterns of pins against a ribbon, which contacts the page and deposits a corresponding pattern of ink dots. Letter-quality printers typically use daisywheels, plastic disks with fingers radiating from the center. At the end of each finger is a raised bit of metal or plastic in the image of a letter or number. A hammer strikes the finger, which presses the ribbon against the page and leaves the image of the desired character on the paper — exactly as a typewriter does.

It's easy to distinguish dot-matrix printouts, which are obviously computer-produced, from letter-quality text, which looks precisely as if it had been typed manually. While dot-matrix printouts are fine for internal reports — even providing a measure of credibility by revealing the computer's involvement in the generation of a document — they have not gained universal acceptance in formal correspondence. There, critics say, dot-matrix text is as out of place as a rubber-stamped signature.

FUEL TO THE FIRE

Adding fuel to the controversy — and eliminating the need for some people to purchase multiple printers — are improved dot-matrix printers capable of producing text that is almost indistinguishable from that generated by daisywheel printers or typewriters. The "almost" is the major bone of contention, with dot-matrix supporters proclaiming the death of the daisywheel over the protests of a diminishing number of letter-quality diehards.

These improved dot-matrix units — properly known as near-letter quality (NLQ) printers, though some vendors say their products are so good they can justifiably drop the "near" — print text in two or three ways.

In draft mode they work like conventional dot-matrix printers, flying along at 200 to 400 cps. In draft-quality text it's easy to see the individual dots that make up each character.

In NLQ mode text is printed at 30 to 100 cps. Each character is printed as usual, then the print head, which holds the wires that form characters, is moved a tiny fraction of an inch and the character is printed again. As a result, the spaces between the dots are filled in and characters take on a more solid appearance, more like the fully formed characters produced by daisywheel printers and typewriters.

Some units print each character's image three or four times in NLQ mode; with these, there is often an intermediate third mode that runs about half as fast as draft-quality and produces characters that are somewhat enhanced, but not as much as in NLQ mode.

This multipass printing technique became popular in 1983. Subsequently, vendors found that they could improve the quality of enhanced text by using print heads with a larger number of smaller pins.

Early printers used five pins; by 1983 the nine-pin print head was standard. Vendors doubled this to 18 pins in the first NLQ printers, and in 1985 Toshiba set a new standard with its 24-pin P-351, which prints drafts at 300 cps and NLQ text at 100 cps. With a wide carriage, a sophisticated paper handling system, and color capability, the machine quickly gained enormous market appeal despite its relatively high price of $1,549. Other manufacturers — NEC, Epson, Star Micronics, and others — followed Toshiba into the 24-pin market almost immediately.

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"The high-resolution dot-matrix printer market is growing tremendously," says Frank Rexach, product marketing manager at C. Itoh Digital Products, which recently introduced a 24-pin NLQ printer. "Most people have trouble affording laser printers that can do integrated text and graphics. Nine-pin printers don't have the resolution, and daisywheels are too slow. The 24-pin — which was initially designed in Japan to print complex Chinese characters — solves the problem."

It remains to be seen whether C. Itoh's Reliant will be "the last printer you'll ever buy," as Rexach predicts. But Dataquest figures show that the chances are good that you'll look for NLQ capabilities in your next printer. Although competition from increasingly affordable laser printers will continue to intensify, the research firm estimates that 210,000 NLQ printers were shipped in 1985, 450,000 in 1986, and that the market will grow to 1.6 million units per year by 1990.

Virtually all dot-matrix printer vendors either already sell a 24-pin NLQ printer or have announced plans to introduce one. Most companies say they will continue to market nine-pin and 18-pin machines along with their more expensive 24-pin models for as long as demand continues — which could be indefinitely.

"Everyone's operating on a more-is-better theory," says Daniel Steele, product marketing manager for printer maker Alps America, "but people need options, and nine-pin machines are suitable for some applications." In particular, their larger wires don't puncture paper as easily, so they're better suited for applications in which multiple copies are printed at once with carbon paper or multiple-part no-carbon-required forms. They also give a more pleasing image when working with color. With Dataquest and other researchers predicting prices will fall to the $100 range by the end of the year, the low-resolution nine-pin printer market shows no sign of disappearing, particularly for home and hobbyist applications.

NO STANDARDS, NO DEFINITIONS

The most important criterion for selecting an NLQ printer is the quality of its hard copy. Unfortunately, there is no objective standard for comparing printed text and graphics. Print quality is always a judgment call.

Exacerbating the problem is a lack of definitions that would provide a framework for comparing printer capabilities. Letter quality, draft quality, near-letter quality, correspondence quality, and other terms are used inconsistently and somewhat arbitrarily by printer makers and sellers. Even market researchers can't agree what the terms mean or ought to mean.

"Real letter quality is the antithesis of characters formed by wires," says Hedy Taub, a senior researcher at Future Computing, Inc. in Dallas. "Letter quality means daisywheel."

Thomas L. Arnett, a Palo Alto, California consultant who recently completed a 300-page report on printers for New York City market research firm Frost & Sullivan, says that although vendors use the handle letter quality "for anything they happen to be selling, my definition is that to the naked eye of the typical user it approaches the quality of a daisywheel. That gets rid of the standard-issue dot-matrix and puts you in the realm of the 24-pin matrix printers."

David Glidewell, the analyst who serves as director of Dataquest's electronic printer industry service, sidesteps the issue entirely. He refers to NLQ dot-matrix units as "high-resolution" printers.

ASSESSING PRINT QUALITY

Definitions aside, most users seem to feel that NLQ printers produce an acceptable letter quality. Research by NEC, a major printer manufacturer, shows that the print produced by a 24-wire machine is acceptable to 50 to 80 percent of users, according to John McIntyre, product line manager for serial printers.

A magnifying glass is invaluable for assessing NLQ print; it yields a better feel for the density of the dots, which is the most important factor influencing quality.

Almost as important is the design of the typefaces the printer is capable of producing. Some typefaces approximate daisywheel-quality printouts better than others. Common faces like Courier and Prestige are most readable. Elite characters, which are printed 12-to-the-inch, provide higher density than pica (10-to-the-inch) characters, and so are generally more readable. Some printers also produce proportional spacing, in which l's and i's are allotted less space on the line than m's and w's. Their vendors say they provide near-typeset quality text.

SOFTWARE COMPATIBILITY

Software compatibility is a key issue in any NLQ printer purchase, for without it, the expensive new NLQ printer may provide no performance improvements over the nine-pin draft-quality workhorse already in use. Although all NLQ printers are capable of printing draft-quality text under the direction of virtually any applications program, the procedures for accessing enhanced features like letter-quality text, boldface, italics, proportional spacing, and graphics are varied — and mutually incompatible.

The most common method of enhancing printouts is to send a series of non-printing characters to the printer immediately before the text to be enhanced. The problem is that some text formatters don't allow the operator to embed such characters in data files that are to be printed. Other programs embed the controlling characters automatically — substituting the characters that turn on italics, for instance, upon encountering a Grph-I in the text — but use unalterable character sequences that may or may not be compatible with a particular printer.

As a partial solution to the problem, most printers allow users to select enhancements via switches located inside the printer or on the front panel. A characters-per-inch switch may have three positions, for instance: 10, 12, and proportional spacing.

While these switches make NLQ printers compatible with even the most temperamental applications programs, they have an important limitation: They don't allow the user to change the settings in the middle of a line or page. The user who wishes to italicize just one word in the middle of a printed page must have very quick reflexes indeed to flip the italics switch on and off as the text is printed at 100 cps or faster.

PRINT SPEED

Speed is a third important selection criterion, and one of the most difficult to evaluate. Speed specifications provided

...OR DO YOU NEED A LASER?

Despite the bullish projections, the NLQ printer market will face a serious threat in the months to come. Laser printers, once confined to high-volume applications where near-typeset quality and high speed were more important considerations than price, are now available at prices approaching those of NLQ dot-matrix printers.

Laser printers provide many of the benefits of NLQ printers: high speed, letter-quality text, mixed text and graphics on a single page, and quiet operation. In each of these categories, the laser printer meets or exceeds the performance of even the most advanced NLQ printer. And although laser printers currently suffer from a severe software shortage, the software that is available does desktop publishing and other tricks that dot-matrix printers can't imitate.

"I don't know why anyone would buy a dot-matrix printer if he could get a laser printer at a similar price," says Chuck Newton, president of Newton-Evans Research Co. in Ellicott City, Maryland. "I wouldn't trade mine in. Over the life of the equipment, the cost difference between an NLQ dot-matrix printer and a laser is negligible." A letter-quality diehard, Newton says NLQ text isn't appropriate for letters to customers or suppliers. "But we'll send them laser-printed letters," he says. "We do it all the time."

Newton has a unlikely ally in James Cullen, director of marketing for Okidata, the printer-making Mount Laurel, New Jersey division of Oki America. Although the company commands second place in the U.S. dot-matrix market, Cullen says: "The laser is superior. It's quieter, it provides superior print quality, and it's usually faster. If you need letter quality, you need a laser." Okidata recently introduced a laser printer of its own.

Defections like Cullen's notwithstanding, consultant Arnett pooh-poohs the laser threat. "The laser is so much more complicated," he says. "People can't go through the agony of learning how to use them. Even with the Macintosh, the easiest computer to use, it's nearly impossible to drive a laser printer."

Also contributing to the NLQ printer's precarious dominance are its better paper-handling capabilities. Laser printers don't accept continuous-form paper, which is commonly used with computers. Nor do they print addresses on envelopes or on standard press-on labels.

The ability to print text and graphics in color is another important feature distinguishing the NLQ printer from lasers, which print only in black-and-white.

More important, perhaps, is the dot-matrix printer's ability to print on multiple-part forms such as invoices, checks, and bills of lading. "When you need high speed and you're using a multiple-page form, dot-matrix is the way to go," says Cullen. "There will always be a need for a high-speed, general-purpose printer for home and office use."

"And don't underestimate the importance of price," says Future Computing's Taub. "The near-letter quality printer is still less expensive than the laser. In the few cases where the price does overlap, you're comparing a low-end, limited-function laser with a top-of-the-line dot-matrix machine."

Contributing to the NLQ dot-matrix printer's cost advantage over laser printers is a little-noted factor: operating costs. According to Alex Schibanoff, operations manager for printer manufacturer Brother International Corp., the toner cartridges required by laser printers drive operating costs as high as 10 cents per page. Daisywheel printers and NLQ dot-matrix units cost about half as much to operate, Schibanoff says.

The bottom line: If you need presentation-quality hard copy, near-silent operation, and high speed, the laser printer may be worth its higher price in your application. If you're satisfied with the NLQ printer's speed, text quality, and graphics, it's probably the more cost-effective solution. And if you use color, continuous-form paper, or multi-part forms, it's the only way to go.

—J.D. Hildebrand

by manufacturers and salespeople are often misleading because they don't mirror real-life situations; almost no one's speed figures relate to actual throughput.

Nine-pin and 18-pin machines have the edge, especially in draft mode, where they routinely exceed 300 cps, or about nine double-spaced pages per minute. But with few exceptions, they lose this advantage when doing high-resolution printing, because they must make more passes — as many as four — to obtain quality approaching that of 24-pin printers. For 24-pin printers, 100 cps is top speed in NLQ mode — about three pages of text per minute.

PAPER HANDLING

Frequently the last factor considered by users, paper handling is actually one of the most important. Few generalizations can be made about standard paper-handling features, but these are some of the questions to ask when considering a purchase: Is a built-in forms tractor standard, optional, or unavailable? Is there a paper saver feature, which eliminates the common practice of wasting the first page every time paper is fed into the printer? Can the printer use cut-sheet paper such as letterheads easily? Is an automatic cut-sheet feeder available? Is bottom-feed an option? And — this is one of the features that makes IBM's Proprinter XL so desirable — can the machine handle cut sheets and envelopes without first removing continuous-form paper?

Along with paper-handling options, consider the width of the printer's carriage. Narrow-carriage printers accept 8.5 by 11-inch paper that's appropriate for correspondence. Wide-carriage printers, though they are able to work with 8.5 by 11-inch paper, also accept 15-inch paper that's more convenient for printing mailing labels, spreadsheets, and product lists.

The chart that accompanies this article lists narrow-carriage printers. However, manufacturers often make narrow- and wide-carriage models of what is otherwise an identical printer. Wide-carriage models generally cost $100 to $300 more than their narrow-carriage counterparts.

SILENCE IS GOLDEN

NLQ printer vendors make much of the quietness of their products compared to daisywheel units. The 24-wire machines are, generally speaking, quieter than those with nine-pin print heads, allowing normal phone conversations while they're running. Noise levels are in many cases under 55 decibels; a Selectric typewriter generates about 60 decibels.

The importance of quietness depends on how much a printer will be used, and in what environment. If silent printing is a priority, consider a laser printer, a thermal-transfer unit such as the IBM QuietWriter, or an ink-jet printer from Diconix or Hewlett-Packard.

PAYING THE PIPER

Finally, the NLQ printer shopper must consider price, which increases along with speed and the number of wires in the print head. Nine-pin NLQ printers average about $650; 18- and 24-pin models sell for about twice that amount. There are exceptions, however. NEC, Epson, and Toshiba have all introduced 24-pin models with list prices under $1,000. NEC's McIntyre says that if prices continue to drop, the nine-pin printer will become obsolete. "There's just no room for the nine-wire machine to survive in the business marketplace," he says. "The only reason 24 hasn't yet killed the market is price."

Users with experience hooking up printers can save 30 to 50 percent by purchasing via mail-order from discount houses. However, this practice is not recommended for the uninitiated. Mail-order purchasers who encounter trouble are often on their own when the printer requires maintenance or repair.

In the face of increased competition from low-cost laser printers, NLQ dot-matrix printers will continue to improve. They will become easier to use, offering more type styles, faster and more alluring graphics, better paper handling, and higher print quality.

The price/performance ratio will continue to improve as well. The $600 printer of a few years ago printed 160 cps in draft only; in 1985 the same money bought a multimode, 200 cps machine. "By year-end 1986," predicts Dataquest's Glidewell, "that price will buy you a high-speed, letter-quality, 24-pin printer. The next step is final report quality, combining graphics and text at a reasonable speed. That requires additional intelligence embodied in the printer, something we should see late next year."◀

Freelance writer Mark Bittman makes his home in New Haven, Connecticut.

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Brother International Corp.'s Twinriter 5 has a unique solution to NLQ compromises. The $1,295 unit has both a daisywheel for letter-quality use and a dot-matrix printhead for high-speed drafts.

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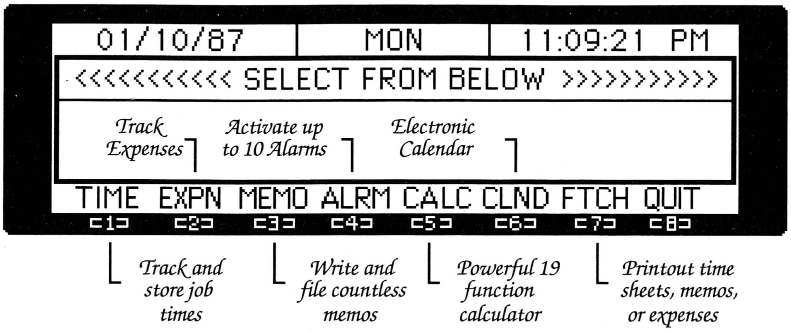

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01/10/87  |  MON  |  11:09:21 PM
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Peek (100)

Traveling Software, the Bothell, Washington company whose T-Word is the word processor to beat in the Model 100 market, recently released an enhancement to its text-editing library. The enhancement is Sardine, a spelling checker. As unlikely as it is to expect a 32K, 80C85-based laptop with a tiny screen to run a memory-intensive spelling checker, Traveling Software has pulled it off. The program works — and in conjunction with T-Word, represents the most advanced word processing system available for the Model 100, Tandy 102 and Tandy 200.

I've spent a couple of weeks getting familiar with the ROM version of Sardine. The program is also available on 3.5-inch diskettes that are compatible with the 100K Tandy Portable Disk Drive or the 200K Portable Disk Drive 2. The disk version, which includes a 33,000-word dictionary vs. the ROM version's 7,000 word mini-dictionary, is greatly enhanced when used with Traveling Software's Ultimate ROM II. Because the ROM version occupies the computer's sole expansion ROM socket, however, it cannot be used with Ultimate ROM II.

PREJUDICES UP FRONT

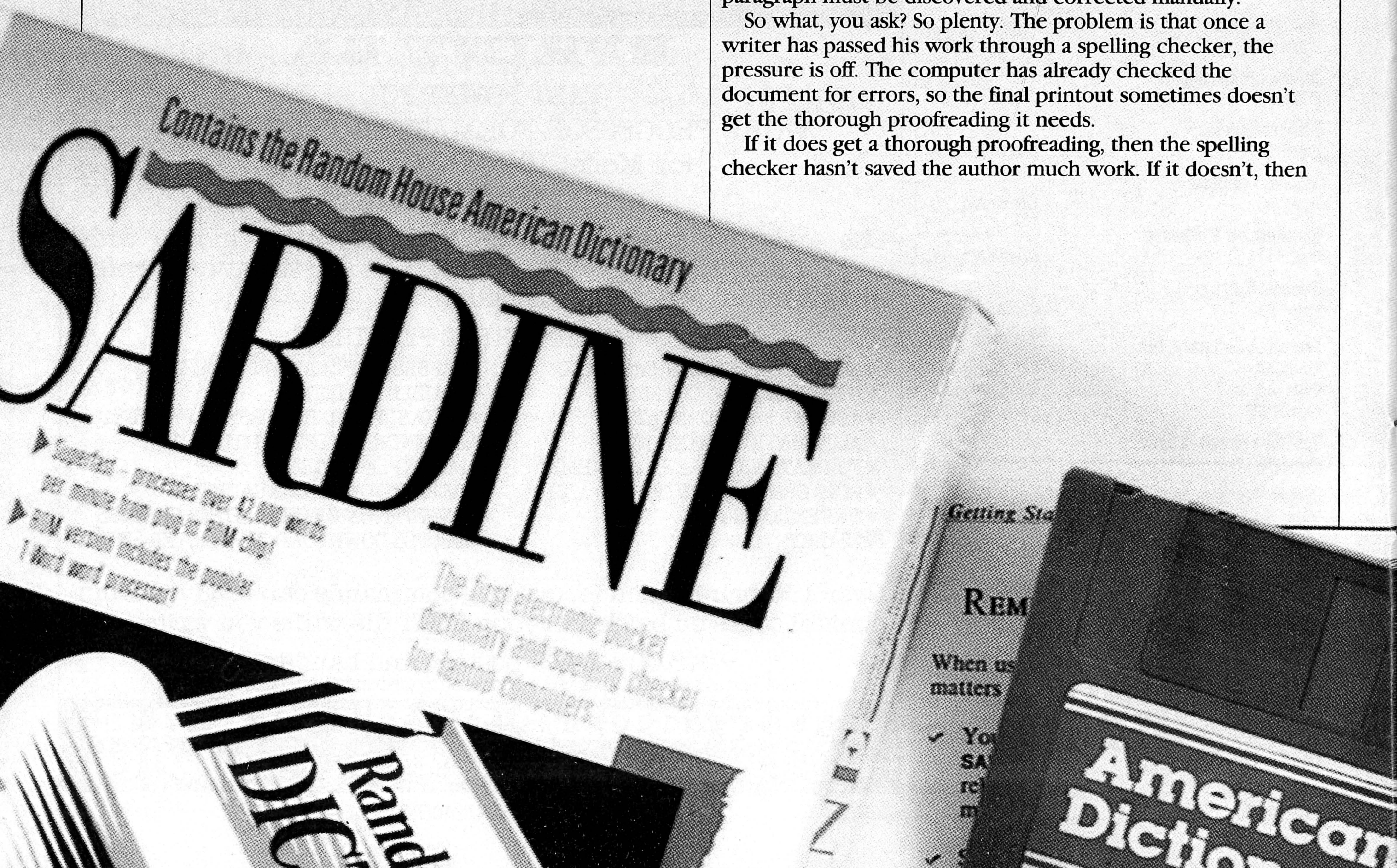
First an admission: I'm not a big fan of spelling checkers. I write for a living, and I benefit if the text I compose or edit contains no spelling or typographical errors. I'm a great prospect for spelling checkers. But I don't use one on my PC and I probably won't continue to use the ROM version of Sardine, delightful and effective though it is.

The reason? Sardine will let you get away with a sentence like *Hi past they're bawl two are teem* when what you meant to say was *He passed their ball to our team*. Seven words in the sentence, all seven spelled incorrectly, and never a peep from Sardine.

This isn't a criticism of Sardine alone, but of spelling checkers as a class. They lack the intelligence to judge the accuracy of words in context. Errors like those in the previous paragraph must be discovered and corrected manually.

So what, you ask? So plenty. The problem is that once a writer has passed his work through a spelling checker, the pressure is off. The computer has already checked the document for errors, so the final printout sometimes doesn't get the thorough proofreading it needs.

If it does get a thorough proofreading, then the spelling checker hasn't saved the author much work. If it doesn't, then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BY J.D. HILDEBRAND

there is a pretty strong likelihood that the finished document will contain more errors than it would if it were checked manually by a competent speller.

It's ironic. Although I have a higher need than most people for accurate spelling, I'm better off without a spelling checker. If I were a terrible typist, prone to typographical errors every three or four words, maybe I would feel differently. As it is, I worry that it creates more problems than it solves.

That said, it should also be noted that the Sardine ROM is an impressively capable program that competes favorably with RAM-hungry programs that run on desktop PCs. It has all the functions you'd expect from a full-featured spelling checker and it operates so quickly that you won't fail to run it for lack of time. This is an important point: Some desktop spelling checkers are simply too much trouble to load and run, with the result that they languish unused in the diskette box.

INSTALLATION

Sardine plugs into the auxiliary ROM socket located under the hatch on the bottom of the Model 100, Tandy 102 or Tandy 200. (It should be noted that Sardine, like all Traveling Software products, is also available for the NEC PC-8201.)

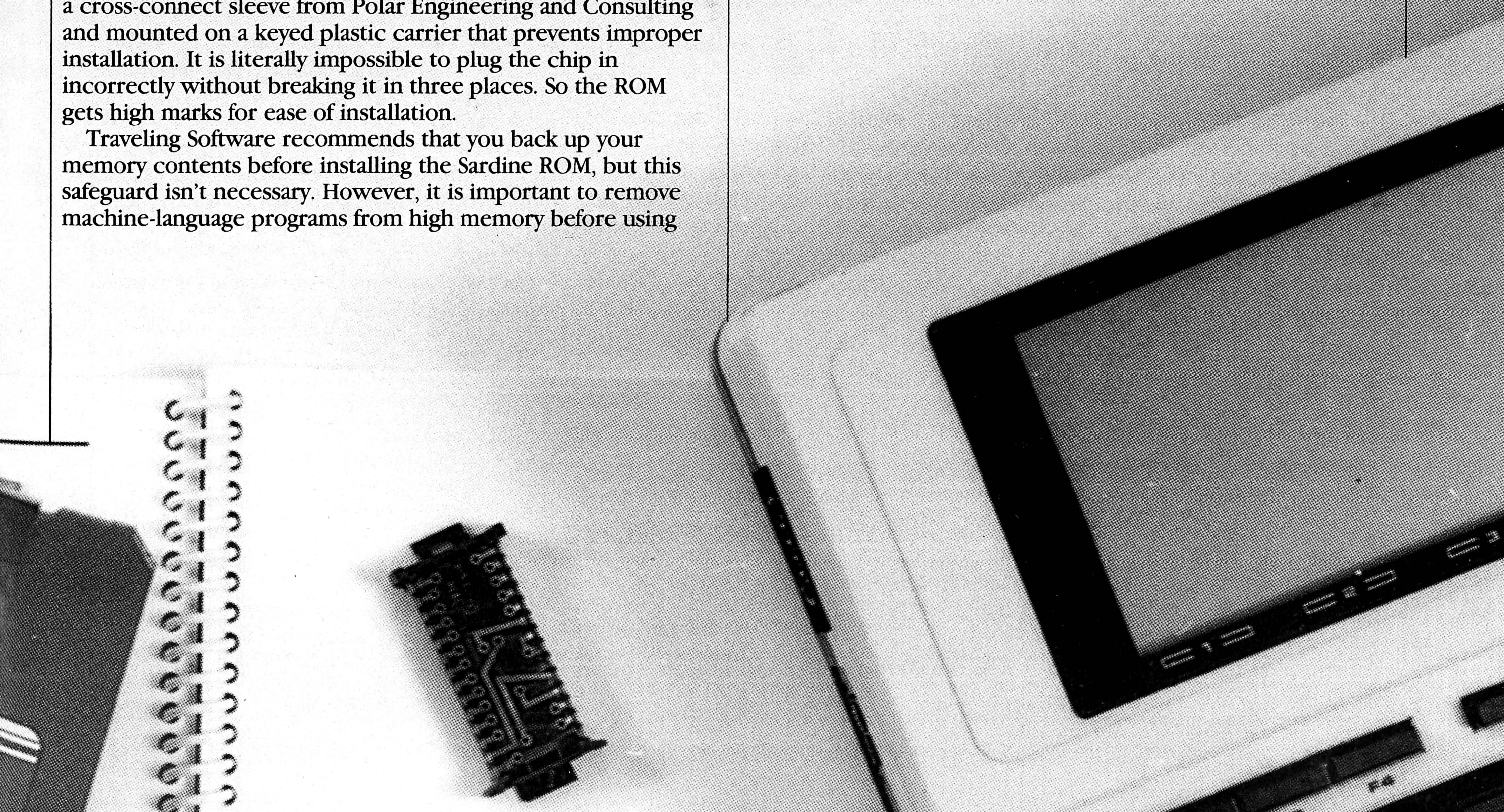
Like all Traveling Software ROMs, Sardine comes wrapped in a cross-connect sleeve from Polar Engineering and Consulting and mounted on a keyed plastic carrier that prevents improper installation. It is literally impossible to plug the chip in incorrectly without breaking it in three places. So the ROM gets high marks for ease of installation.

Traveling Software recommends that you back up your memory contents before installing the Sardine ROM, but this safeguard isn't necessary. However, it is important to remove machine-language programs from high memory before using the chip for the first time. Otherwise Sardine and the .CO program will fight over memory space and you will be the loser. You'll have to cold-start the computer and blast your laptop's memory contents to bit heaven.

Once the chip is installed, you simply turn the computer on, enter BASIC and CALL a memory address to initialize the program. On the Model 100 and Tandy 102, for example, you type CALL 63013,1. This process, with small variations, is the same required for all ROM-based programs for laptops. So once again Sardine gets good marks.

OPERATION

It's at this point that you learn something interesting about Sardine. The copyright screen that appears doesn't say "Sardine," but "T-Word with Sardine." You get more than you bargained for: not just a spelling checker, but Traveling Software's popular and sophisticated word processor as well. It's thrown in as a bonus, and it's worth Sardine's price even if you never use the spell-check functions. When you exit from the program, you'll find T-WORD+, CONFIG.DO and WORDS.DO added to your laptop's main menu — but no mention of Sardine. The spelling checker is part of the word processor.



A full discussion of T-Word's features is beyond the scope of this article, but it's worth noting that it offers such functions as variable margins and page length, line justification, line spacing, alternate typefaces, automatic page numbering, conditional paging, search and replace, an overwrite mode, word-counting, a graphic page-plot, mail-merge capabilities ... the list goes on and on. T-Word enjoys a fanatical user base and deserves its good reputation.

Sardine makes T-Word even better.

To check a document file, simply press Grph-F while you're within TEXT or T-Word. The computer responds with a prompt: *Use [R]OM or [D]isk.* Since I used only the ROM version, without the auxiliary disk, I answered with an R. However, since the dictionary disk comes with the ROM software, you could choose either.

The program sorts the words in the file, then checks them alphabetically. Messages appear on the screen periodically to keep the user apprised of the program's progress: *Checking A's, Checking B's* and so on.

Sardine also checks each word against a RAM-based auxiliary dictionary called WORDS.DO. It's a good idea to add your name and other frequently typed but uncommon words to this file; otherwise they will always be flagged as incorrectly spelled.

This procedure is common to all of the better spelling checkers on the market, though some early programs didn't allow the user to add words to the dictionary. The ability to create a custom dictionary of words you frequently use is a key selection criterion for any spelling checker.

When the program has finished checking the words, it reports the total number of words in the file as well as the number of misspelled words. In an apparent move to give the user the benefit of the doubt, Sardine doesn't call misspelled words misspelled words. Instead, it refers to them as "not found" in the dictionary. This is actually more accurate; many correctly spelled words do not exist in the Sardine dictionary, and so are flagged as possibly misspelled.

Also appearing on the screen is a line of dots. This represents the misspelled words in your file (or at least, the manual reports, the first 100 of them) — one dot for each word. This helps you anticipate how long it will take to make the necessary corrections in your document.

FUNCTION KEYS

At this point you control Sardine through the computer's function keys.

F1, defined on the status line of the 100's LCD as *Ok,* lets you accept the displayed word as correct and move on to the next one.

F2, *Cntxt,* lets you view the text that surrounds the flagged word. If the misspelled word is "hir," for example, you would probably need to review it in context to determine whether it should be changed to "hire," "her," "here" or some other word.

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The truth is that at $399, the Chipmunk is plain better value than the Tandy portable disk drive at $199. Here are the facts:

1. Capacity. Each Chipmunk disk holds 360KB. The Tandy drive capacity is only 101KB. This means that for every Chipmunk diskette you buy,you would have to buy 3½ diskettes for the Tandy. These diskettes cost over $50.00 for a box of 10. It doesn't take a computer to figure out that the Chipmunk can save you a bunch on diskettes.

2. Speed. Operation of the Chipmunk is virtually instantaneous. Over 6 times faster than the Tandy drive. This because the Chipmunk technology is inherently superior. It taps directly into the system bus of your Model 100, while the Tandy drive is limited by the slow bottleneck of the serial interface. If you have used a cassette recorder to store your files, you already know the frustration of waiting for a save or load.

3. Power. The Chipmunk automatically provides sophisticated extensions to the Model 100 BASIC that provide true random access on the disk. Random access is the major theoretical advantage of disk storage over tape storage. The Tandy drive lacks random access from BASIC. In fact BASIC can't read or write on the Tandy drive at all! In this respect the Tandy drive is inferior to even a humble cassette player, while the Chipmunk is equivalent to an IBM PC disk drive.

4. Rechargeable batteries. Battery life on the Tandy drive is specified at just 2 hours of continuous use. Then you need to buy a new set. The Chipmunk has built in NiCad batteries which automatically recharge whenever you have the AC adapter connected. Incidentally the batteries are included on the Chipmunk.

5. Ease of use. You may find this difficult to believe, but in order to get the Tandy drive going, you have to type a little 3 line BASIC program into your Model 100 and reset some switches on the drive, run the program and then set the switches back. This is wincing known as 'user hostile.' But you'll love the way you start up the Chipmunk. Just plug it in and press a single button.

In use, the Chipmunk offers you a menu just like the familiar Model 100 main menu but with lots of added power features. To save or load any file you simply move the cursor to the filename and press a function key. Contrast this with the Tandy drive, which steps back a software generation by demanding that you type in the entire file name every time!

Whats more, the Chipmunk comes bundled with lots of powerful free application software. The Tandy drive doesn't include any applications at all.

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PLEASE CIRCLE NO. 8 ON READER SERVICE CARD

F3, *Dict,* lets you consult the dictionary to find a correct spelling for the flagged word. Unlike programs for desktop PCs, however, which can provide a list of alternative possible spellings based on the misspelled word, Sardine requires that you provide a search string. The possible alternatives Sardine locates will all begin with the string you specify. This is one of the few important areas in which Sardine does not work as easily or as efficiently as desktop spelling checkers.

A trip to the dictionary may return more words than the 100 can display on the screen at once. F1 provides the next screenload of words.

To select a word from the list provided by Sardine, simply move the cursor to it and press Enter. At this point Sardine requires that you specify whether you want to correct the word in all occurrences, to correct conditionally, with a "replace?" prompt at each occurrence, or whether you want to quit without making any changes.

F4 and F5, *Prev* and *Next,* let you review flagged words without changing them. F5 is similar to F1, but it doesn't unflag the word. So if you decide later that you want to correct the word after all, you can press F4 to return to it.

F6, which carries a *Lern* label on the status line, lets you add the misspelled word to your auxiliary dictionary, the WORDS.DO file that's maintained in RAM. You can also add words to WORDS.DO manually.

F7, *Spel,* lets you correct the word without consulting the dictionary. You simply type the word as it should have been spelled.

And F8, *Text,* returns you to the document you are editing.

It's important to note that in addition to misspelled words, Sardine identifies repeated words within a document. This advanced feature is not offered on many desktop spelling checkers.

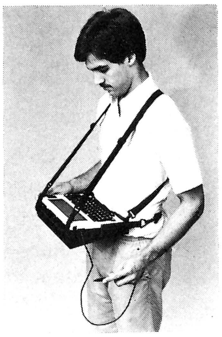
WORD BY WORD

It's also possible to check individual words as you type or edit a file without checking the rest of the document. While Grph-F checks an entire file, Grph-W checks single words. The only thing you have to remember is that you must place the cursor over the *last* letter in the word to be checked (or over the space immediately after it). The program evidently defines a word as all the text between the cursor and the first space (ASCII 32) to the left of the cursor.

This knowledge is handy; it means that if you want to check just the root of a word, without any suffixes, you can place the cursor somewhere within the word.

Like the F3 option under file-checking, Grph-W responds with a list of words from the ROM or disk dictionary. You can leave the word as it is or correct it. If no word is found that contains the misspelled word, you simply return to the editor,

TRAVEL CASE



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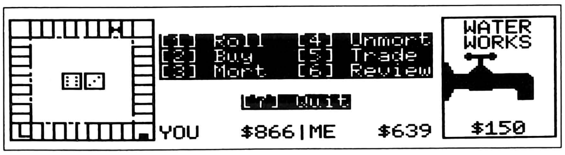

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PLEASE CIRCLE NO. 18 ON READER SERVICE CARD

move the cursor the left a space or two, and try again.

Sardine has some limitations: It checks words that end in *'s* only as far as the apostrophe. So misspelling's like *does's* can slip through. Other contractions, however, like *don't* and *can't,* are checked in their entirety.

Also, Sardine ordinarily maintains just one auxiliary dictionary, which must be named WORDS.DO. If this file becomes very long it may not fit into RAM, or it may increase the time it takes to check a file or word to an unacceptable length. You can solve this problem by creating job-specific WORDS.DO files and storing them under different names. Just rename them to WORDS.DO when you want to use them.

EFFECTIVENESS

Sardine's ROM dictionary contains just 7,000 words. You might expect that it would therefore identify far too many words as possibly misspelled in most documents. However, this is not the case. The 7,000-word dictionary was developed at Wang Laboratories in a two-year analysis of business writing, and it contains most of the words you're likely to use in everyday correspondence. Once you add proper names to WORDS.DO, you'll find few incorrectly flagged words.

Every Sardine ROM also comes with the 33,000-word Random House American Dictionary on a TDD or TDD-2 disk. While this disk lengthens the word-review time, it further reduces the number of inappropriately flagged words. This increases Sardine's value for disk users.

Should you buy the Sardine ROM? It depends. If you already use a word processing program, its only value is as a spelling checker. My own opinion is that spelling checkers as a class aren't that valuable, but if you want one, this is the one to buy.

If you already use a ROM-based program such as Ultimate ROM II or Super ROM, then you can't use the Sardine ROM without extraordinary measures — swapping ROMs every time you want to check a document or purchasing a 6 ROM Bank or PG Designs Vault. If you fall into this class, you should check out the disk-based version of Sardine.

But if you're a Tandy disk drive user searching for the ideal word processing system, Sardine is it. You get a fast, powerful spelling checker *plus* T-Word — the most potent word processing combination yet developed for the Model 100 family.

The Sardine ROM retails for $169.95, including the disk dictionary, ROM chip, Sardine manual, T-Word manual and a copy of the Random House American Dictionary pocket version. It requires at least 16K of RAM.

Contact Traveling Software, 19310 North Creek Parkway, Bothell, WA 98011, (800) 343-8080, or (206) 483-8088 in Washington.

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PLEASE CIRCLE NO. 19 ON READER SERVICE CARD

Laptop Users

SARAH STAMBLER, NEW YORK, NEW YORK

"I always felt weird. Different from everybody else," recalls Sarah Stambler of her first 38 years. Now, at 41, she's seeing herself in a new light. The change began in 1983 when she bought a Model 100 and became the major catalyst for creating Lap Users Group, a community of New York Model 100 users. She found her high energy, creativity and technical orientation mirrored in the laptop users who showed up, month after month, at the meetings she organized. She describes other LUG members as "incredible people, renaissance people," and Stambler is certainly one of them herself.

Stambler is president of Tech-Prose Inc., a documentation firm. Tech-Prose has had only five major clients in the past four years, but they've included heavy hitters like *The New York Times, Time Inc.* and *Chemical Bank* — sufficient to boost Stambler's yearly income into the six-figure range.

Stambler likens her 100's arrival to that of a first baby: "I was so excited I couldn't sleep at night." She was thoroughly smitten by the small machine, and she threw herself into learning how to use it.

Her enthusiasm was only slightly dampened by the skimpy nature of Tandy's Model 100 user's manual. Compensating several times over for the manual's opacity was a free three-month subscription to CompuServe. "It completely revolutionized my life," Stambler says of those first months online. She started asking for help on CompuServe's Model 100 special interest group — how to paginate, move files around, format text — and was amazed at how quickly people responded to her requests. "It was so fast! And so many people answered my messages," she says.

Encouraged by so many friendly and helpful online encounters, Stambler figured it shouldn't be difficult to start a user group. She began to leave messages on CompuServe: "Anyone interested in forming a Model 100 user group in New York City, please call...."

Soon after, about 20 Model 100 owners began meeting monthly in her home. Stambler was asked to be president of the organization, and an elected club secretary began sending postcards each month to members telling them the date, time and topic for the next meeting.

Stambler recalls many lively evenings when club members swapped public domain software and helped each other solve programming problems. Frequently the gatherings lasted from 7:30 p.m. until midnight.

"The largest meeting was the one when Dave Thomas, [then] CompuServe's Model 100 SIG sysop, spoke about his experiences. There were about 50 people in my apartment that night!" Stambler recalls.

Over time, however, original members stopped attending and new members took their places. "People would master the 100, and since most own more than one computer, they'd lose interest in the meetings. New people are coming into the group all the time," Stambler says. She estimates that she receives four or five telephone inquiries a month from people interested in joining LUG. Today's meetings are likely to see 10 to 12 people; the meeting place has been moved from Stambler's home to a nearby Radio Shack store.

"We lost the experts," bemoans Stambler, who is often the only original member present at the monthly LUG meetings. But Stambler is not one to sit around and complain. Missing her more experienced counterparts, she scheduled a business-and-professionals-only meeting. At the time of this writing, word on this event had just gone out. "Now I'm getting letters from old members," a pleased Stambler reports.

Stambler says she "does the club for fun," but clearly the 100 also plays a serious and integral role in her life. An unadvertised sideline of her business is teaching laptop computing to corporate executives. "I teach them how to organize their offices, their desks — their lives," states Stambler. "I teach them how to stop using a pad and pencil. And I help executives with one of the biggest questions they ask: how to transfer files from a 100 or 102 to a desktop computer."

Telecommunicating, hooking up to CompuServe, getting hold of public domain software and many other operations are also part of Stambler's private course for executives. "I teach them everything I've learned about the 100 in six hours," she says. Her four years of experience with the 100 are packed into three two-hour sessions. The instruction package includes unlimited access to Stambler by phone in case the client needs further assistance.

Training executives and writing manuals aren't the top priorities in Stambler's life right now, however. Like so many Model 100 owners, Stambler has an entrepreneurial spirit that is just beginning to stretch to its full depth and breadth. Working with a programmer, Stambler is providing the conceptual design to develop health-care practice management software for several clients.

That isn't all, of course. There's book packaging, book writing and more. Her energy is inspiring, and she openly and appreciatively attributes a portion of her success to the "incredible people" who belong to LUG 100. "They can answer anything," she asserts. "I know lots of heavy-duty people (through the group), real byte-heads who want to help, who want to give presentations." She gives special praise to a particular "heavy-duty byte-head" — Carl Oppedahl, whom she credits with being a key member and a reliable technical advisor.

BY DEBORAH DAVIS

Perhaps most impressive about Sarah Stambler is her strong commitment — to her own personal growth as an entrepreneur as well as to the Model 100 community she has catalyzed, coddled and cared for. She laughs when this commitment is mentioned. "I keep trying to quit [as president of the club], but the members won't let me! They keep waiving elections and reinstalling me."

JAMES BOTT, SAN DIEGO, CALIFORNIA

James Bott's life revolves around membranes. Bott's membranes are the chemically manufactured type: thin sheets of synthetic material that are selectively permeable to substances in solution. He doesn't manufacture them himself, although for 10 years he researched and invented new types of membranes for all kinds of scientific and medical applications. He recalls sadly, "Most of the things I invented never got to market. There was usually no one in charge of getting new products to market."

Bott worked as a project manager in his last job, until the foundering high-tech company had to lay him off when his last project ended. Convinced that the market for membranes is a promising one and that production and marketing could be done cost-effectively, Bott decided to learn how to do it himself. With a partner he founded his own project-management consulting company, working mostly with high-tech companies.

What's lacking in these companies, Bott says, is a cross-department manager who can get products to market quickly and at a reasonable cost. "Speed is crucial," says Bott, "because products quickly become outdated."

As a project manager, Bott is something of a membrane himself. His task is to create a filtering mechanism that allows the balanced and beneficial exchange of resources, products, customers and money. He intends to put the knowledge and experience gained from consulting to other companies to work on a membrane research and development company of his own, which is currently in the start-up stage.

With his attention divided among the research, development, marketing and consulting arenas of the membrane world, Bott filters a lot of his activities and information through yet another membrane: his Model 100. "What do I do with it?" he laughs. "Everything! Word processing, report writing, proposal writing, telecommunicating, task tracking, database management, spreadsheet analysis...."

MICHAEL LAVERY, NEW YORK, NEW YORK

Michael Lavery fights for the underdog. He's a New York City lawyer in general practice whose specialty is real estate — defending tenants who are being evicted or who can't pay their rent. His computer experience extends back 25 years to when he worked for a computer company owned by the law school he attended. Later he worked for Lexis, a database service for the legal field, exploring and developing ways to use computers for legal research. He also did a stint as a consultant for lawyers, teaching state legislators and lawyers to use computer services.

One of his biggest disappointments during those years was that he couldn't find a way to put online legal research within the financial reach of individual lawyers in private practice. "Services like Lexis charge about $500 a month minimum," says Lavery, a cost only larger legal firms can comfortably absorb.

Recession put Lavery's consulting job in jeopardy in 1970, and he found himself facing a choice: be transferred to Dayton, Ohio or become unemployed in New York City. The choice was easy. "I'd already escaped from a small town in Pennsylvania where I grew up," says Lavery, who took the bad news as an opportunity to launch his own practice.

Practicing in a city where the housing situation is acute, Lavery has found himself involved in one of the hottest legal and emotional debates: after a male leaseholder dies from AIDS, does his male ex-roommate and lover — whose name is not on the lease — have the right to remain a tenant in the apartment they shared? City legislation does protect "unmarried spouses" in similar situations, but when the spouse happens to be male, city landlords have been quick to evict them.

"This is not a case of morals," insists the New York lawyer, who says that landlords don't care about the sexual preference of their tenants or the fact that one died from the notorious disease. "It's purely economic. The landlord can't raise the rent until he has a new lease."

Most of Lavery's practice deals with more mundane matters, and while he finds the Model 100 a handy notebook for keeping appointments, doing a little writing, and taking notes, he asserts that "I'm not one of those people who can't live without it." For Lavery, the 100 is also recreational; he likes to experiment with programming. "I use it for intellectual exercise," he says.

RONNIE RICHE ARABI LOUISIANA

I found Ronnie Riche at home taking care of his young son, who was recovering from minor surgery. A self-employed chemical salesman, Riche uses his Model 100 to keep track of all his business accounts, including the formulations of the sanitizers, disinfectants and other chemical products he sells. Just completing his first year on his own, Riche says about selfemployment: "It's easy for me. I don't have to listen to anybody!"

Riche bought his 100 while in the employ of another company, where he worked for six years. "That company was not computer-wise," recalls Riche. "They saw my computer as strange, like it was from outer space." Although the company didn't benefit from the 100's capabilities, Riche did, using it to keep track of all his commissioned accounts. When he decided to leave the company, he had a long list of potential clients already assembled in the little machine.

"It sounds Machiavellian, but it wasn't planned that way," Riche hastens to say. "I thought I could do better out on my own, and I'm not in competition with my old firm since I sell a different line. The company was glad to see me go — they needed my salary." He says that having information on many potential accounts made his first year much easier than it would have been otherwise.

PAUL BIBA
BERNARDSVILLE, NEW JERSEY

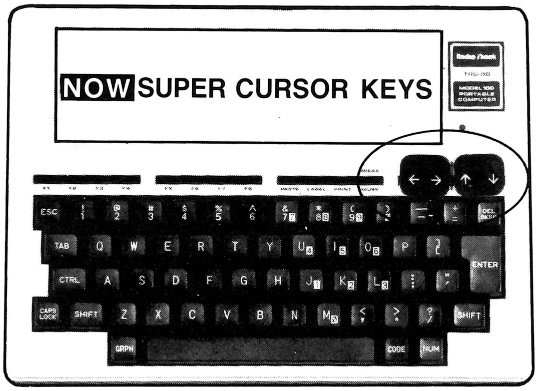
"I get nervous when I sit at my desk more than three weeks. I think, what am I doing wrong?" A lawyer with AT&T, Biba spends about 30 percent of his time traveling all over the world. Lately, his most frequent destination is Japan.

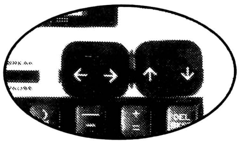
His 100 is part of his traveling office. "A week after the machine came out, I went down to the (Radio Shack) store and bought the first one they had."

On the rare occasions when the machine stays home, Paul's wife, who writes internal publications for AT&T, writes on the laptop and then downloads her pieces to the couple's AT&T 6300 desktop computer.

While Biba travels with a portable printer, he prefers the more professional printout he gets back in the States interfacing the 100 with an Olivetti typewriter. "It's slow — only 10 characters per second — but the quality is beautiful. I use continuous-form paper, and if I line it up very carefully I only have to realign the paper every five or six pages, or less. It's a great arrangement for the price."

The busy couple has a six-year old daughter who is not in the least intrigued by the Model 100 or any other computer. "She likes to play," Biba points out, "and most of the computer games try to teach kids something. She's too smart to fall for that. She knows the games are really trying to educate her, and she doesn't want any part of it."◀





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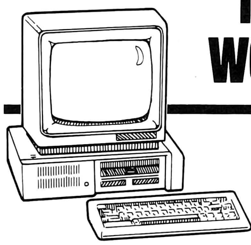

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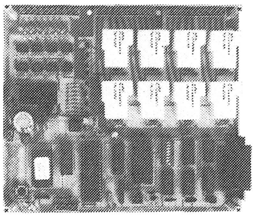

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Nuts & Bolts

"Nuts & Bolts" is the part of *Laptop User* that's specifically designed for beginning BASIC programmers. You'll also find some tips here that even experienced programmers may have overlooked. If you've got a tip or two of your own to contribute, send it in to *Laptop User,* P.O. Box 712, Salem, MA 01970. If we select it for publication, we'll mail you $25.

PRINTER LOCKUPS

Users frequently get errors when programs attempt to send data to the printer only to find that the printer is not connected, is turned off or is off-line. While Shift-Break always solves the problem, it halts program execution and leaves the operator in BASIC. If you've written a program for a novice, this can be quite disconcerting.

It's possible to circumvent the error by having BASIC check to be sure the printer is ready before sending text out the parallel printer port. Add lines like these to your program:

```
10 IF (INP(187) AND 6) <> 2 THEN
   INPUT "PLEASE MAKE SURE
   PRINTER IS CONNECTED,
   TURNED ON AND ONLINE, THEN TAP
   <ENTER>: "; X$: GOTO 10 ELSE
   GOTO 20
```

The INP command is used to read data from various ports of the laptop's hardware. In this case, it evaluates the status of the "ready" line of the computer's parallel port and gives you a chance to set up the printer before crashing the program.

THE INFAMOUS DATE BUG

You may have noticed that the date shown on the 100/102 main menu occasionally, inexplicably gets changed. This generally occurs after use of TELCOM. It's a verified bug in the laptop's ROM.

The simplest solution is run this short program now and then:

```
10 DATE$ = LEFT$(DATE$,6) + "87":
   MENU
```

There are many other solutions, some of which use PEEKs and POKEs to solve the problem, but they're not any better or faster than this one. If you like, you can add this line (without the MENU command) to any program you run frequently. This will make the process automatic.

IPL PROGRAMS

Better yet, you can automate the process without modifying any other program. Just save the one-line program as DATE.BA, enter BASIC and issue this command:

```
IPL "DATE"
```

BASIC will respond with *Ok,* and that's all there is to it.

Well, not quite. From now on, every time you turn the computer on it will enter BASIC, run DATE.BA and return to the main menu.

You can use the IPL statement to make your laptop run any program that you desire — automatically — every time you turn it on. This is especially handy if you've written a program for computer neophytes. They'll never have to confront the menu or select a program.

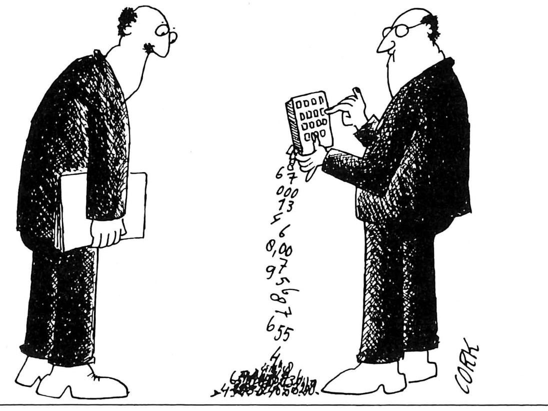
To disable the automatic program-running function, just enter BASIC and type IPL on a line by itself.

SIMPLYING USER RESPONSES

All too often, programs contain lines like these:

```
10 INPUT "CONTINUE (Y/N) "; YN$
20 IF LEFT$(YN$,1) = "Y" OR
   LEFT$(YN$,1) = "y" THEN GOTO
   100
30 IF LEFT$(YN$,1) = "N" OR
   LEFT$(YN$,1) = "n" THEN GOTO
   200
40 GOTO 10
```

It's a common problem — you have to obtain a response from the user, then act on it. But this clunky solution takes plenty of typing and consumes vital RAM. One way to reduce the work is to use BASIC's INPUT$ command, which collects a specified number of keys from the keyboard or from a file. Try this:



```
10 PRINT "CONTINUE (Y/N) ";
20 YN$ = INPUT$(1)
30 IF YN$ = "Y" OR YN$ = "y" THEN
   GOTO 100
40 IF YN$ = "N" OR YN$ = "n" THEN
   GOTO 200
50 GOTO 20
```

Finally, you can use the INSTR command to simplify the response-analysis lines:

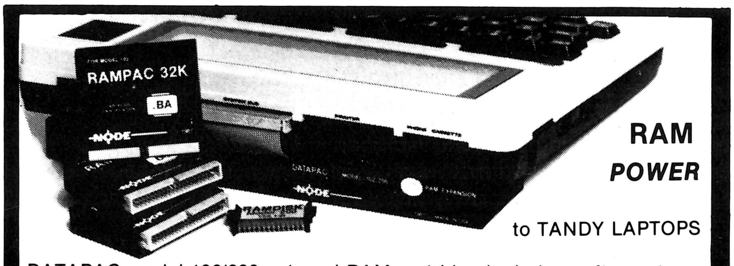
```
10 PRINT "CONTINUE (Y/N) ";
20 YN$ = INPUT$(1)
30 ON INSTR("YyNn",YN$) GOTO 100,
   100, 200, 200
40 GOTO 20
```

INSTR(string1,string2) searches for the first occurence of string2 within string1, reporting that position as an integer value. In the example above, the integer is used as the argument for an ON X GOTO statement. But there are many other uses for the command.

Incidentally, many users mistakenly use the INKEY$ command in place of INPUT$ in programs like those shown above. Like INPUT$(1), INKEY$ returns a one-character string from the keyboard. But it repeatedly scans the keyboard for a pressed key, so the solution has to look something like this:

```
10 PRINT "CONTINUE (Y/N) ";
20 YN$ = INKEY$
30 IF INKEY$ = "" THEN GOTO 20
40 ON INSTR("YyNn",YN$) GOTO 100,
   100, 200, 200
50 GOTO 20
```

INKEY$ is better used in situations where the user needs an opportunity to interrupt an ongoing process. The command IF INKEY$ = CHR$(27) THEN STOP halts program execution when the user presses the Esc key, but ignores every other keypress. It's a handy command when used properly.◀



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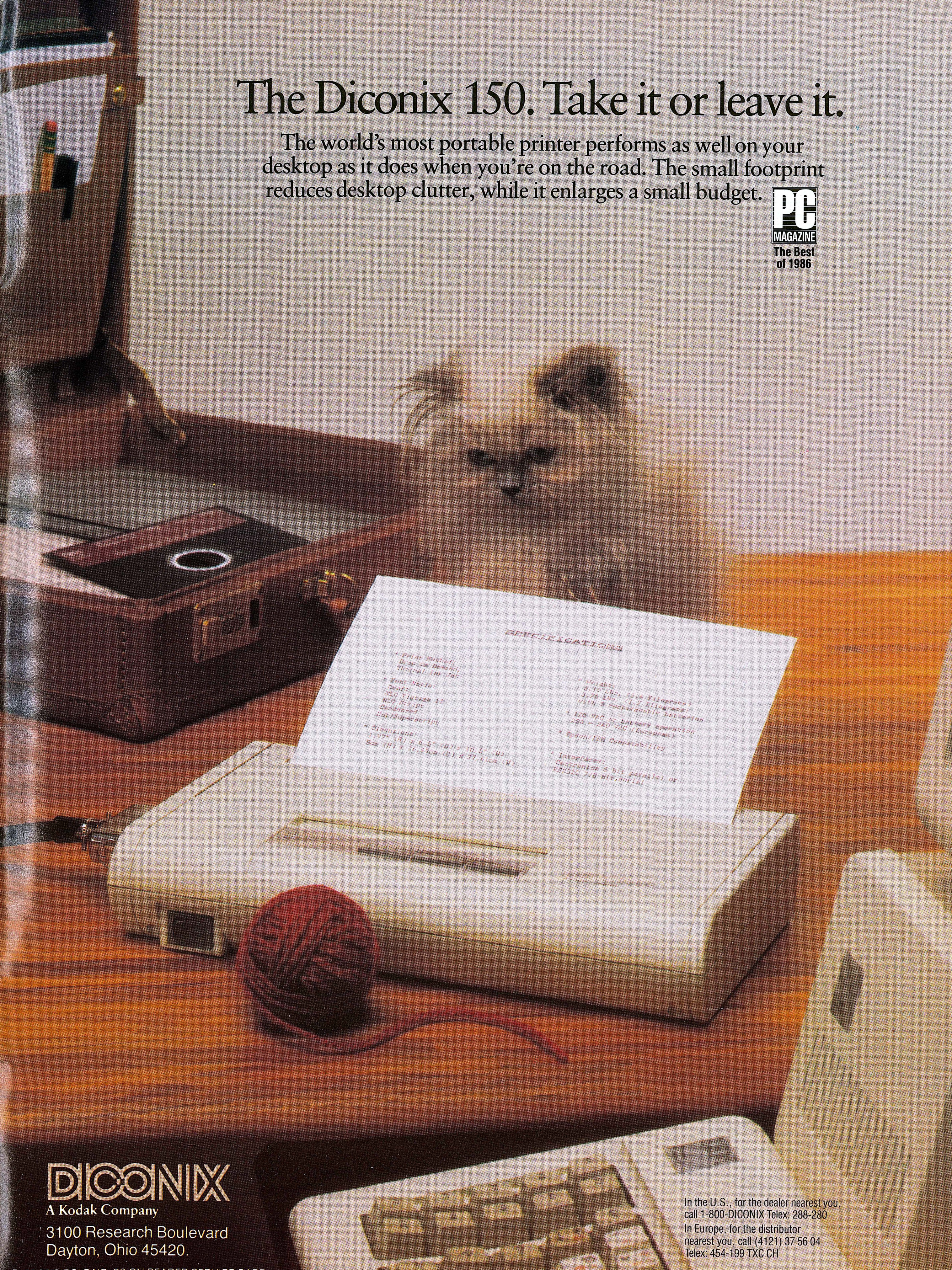

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PLEASE CIRCLE NO. 33 ON READER SERVICE CARD

Functions: Some surveyed users rated the Chipmunk low because it did not perform specific functions that they needed for particular tasks. However, the unit receives a good to very good overall rating.

One particularly desirable function is the ability to store downloaded information directly on the disk instead of in a RAM file while connected to an online service such as CompuServe via the 100's internal modem. The Model 100 version of the Chipmunk performs this task flawlessly; users of other versions report problems, which may or may not have been resolved by the time this issue is printed. If this is an important function to you, call PCSG at (214) 351-0564 to determine if it is available on the Chipmunk that's compatible with your computer. Or try it for yourself: PCSG offers a 30-day money-back guarantee with the unit.

Support: This is the only area in which the Chipmunk receives an unsatisfactory rating. Several users reported that they learned of software upgrades only from other users — PCSG did not alert them to the existence of free, bug-eradicating upgrades, they say, nor mention the upgrades during calls to the technical staff. "I bought my Chipmunk a week before a software update was released," says one user. "I had lots of trouble, and PCSG's tech department couldn't help me out. They didn't know what was wrong. Finally I asked a friend who is a Chipmunk expert, and he asked me what software version I had. He gave me a copy of the current software release, and I had no further problems."

The same user reports that technicians at both PCSG and Holmes Microsystems have spent hours answering questions and attempting to resolve problems over the telephone, however, at no charge to him.

Other users believe upgrades are overdue, particularly in the area of integration. "The Chipmunk should integrate seamlessly with PCSG's ROM products," one says, "and it should be able to communicate conveniently with the IBM PC. There is little ongoing development going on."

Portability: The Chipmunk is small and light, and it operates on batteries, so it is quite portable. However, more than half the surveyed users report that they rarely travel with the unit. "It's part of my desktop workstation," one reports. "I unplug it and carry the 100 alone when I have to travel."

Weak points: Asked to assess the Chipmunk's weak points, users come up with an array of minor complaints. "It doesn't function as virtual memory for the 100," one says, while another complains that "it should store 720K like the microfloppy drives offered on other laptops." Most of the complaints have little to do with the drive itself.

Several users, however, conclude that the Chipmunk's internal power supply is more trouble than it's worth. "I never travel with mine, so AC power would be less trouble," one says.

"I'd rather have removable batteries," says another. "That way when they get low I can just replace them and keep working, instead of waiting for the internal batteries to recharge."

Strong points: Users have no trouble identifying the Chipmunk's strong points. "High speed." "True random access to data." "No limit on file size." "Accessible from BASIC with extension keywords." "Easy to use."

All surveyed users say the Chipmunk's strong points outweigh its weak points.

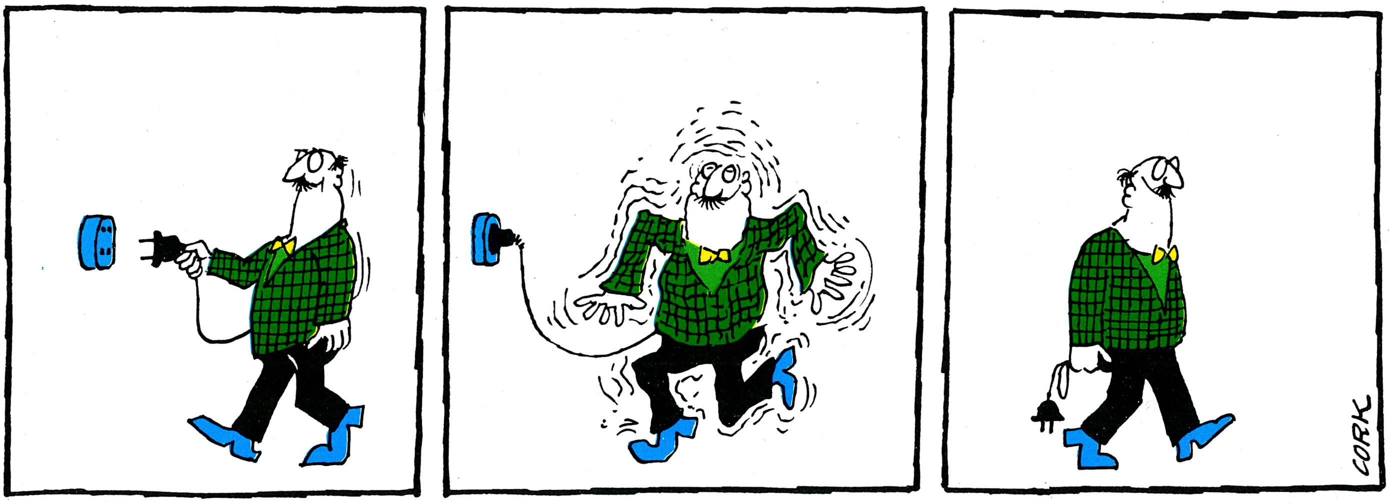
THE BOTTOM LINE

When you see a chipmunk at the zoo or in your back yard, the first thing you notice is its speed: It races along the lawn or a branch so fast your eyes can barely keep up with it. Next you might notice that it's quite small — just a pound or two. Finally, if you observe a group of them for a while, you might see that their cheek pouches hold a surprising amount of food.

These three factors — speed, smallness and capacity — are also what you notice about the Chipmunk disk drive. The name is remarkably apt, even without the supposed pun on "chip."

On a technological level, the Chipmunk is immeasurably superior to Tandy's portable disk drive. For many users, its speed, flexibility and ease of use make it the clear choice when upgrading their systems. The money-back guarantee makes it an easier choice to make.

Questions about support and compatibility with third-party software must be answered on a case-by-case basis. Other drives may be better for some applications. But most users say the Chipmunk is simply the better choice.◀



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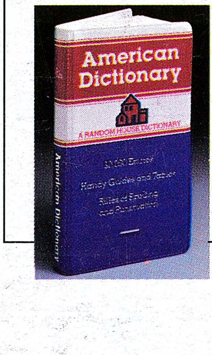

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